THE VETERINARY JOURNAL
AND
Annals of Comparative Pathology.

APRIL, 1883.

"PNEUMO-ENTERIC FEVER," OR "PINK-EYE."

BY CHARLES GRESSWELL, M.R.C.V.S., NOTTINGHAM.

A FEW observations on the epizootic disease commonly called "Pink-eye," to which, however, the designation "Pneumo-enteric Fever" may, perhaps, more fitly be applied, will probably be considered appropriate and interesting at a time when the prevalence of the disease in Nottingham and other districts has lately been a noticeable phenomenon.

Isolated cases of this disease have, it is true, been seen here from time to time during the last eighteen months; but it was not until December, 1882, that any serious proportions were assumed. During the middle of that month, some Russian ponies, which had recently arrived in the town, were found to be affected, and one or more died. From these, as a centre, the disease spread, at first manifesting itself amongst the horses occupying the other stables of the public-house yard in which the ponies had been quartered. The propagation of the disease from this yard to places two and three miles distant, I have been able most distinctly to trace. As an instance, I may mention the case of an owner of three horses employed to lead manure from the yard, one of his horses being visibly affected four days after exposure to the infection, another on the fifth day.

It may be mentioned that, in the majority of cases which I have attended, direct contact with other affected horses could be proved, and that the first outward symptoms were invariably manifested on the fourth or fifth day subsequent to that on which

XUM

this contact was known to have occurred. From the fact that in many instances where the existence of the disease was discovered, the temperature was observed to be elevated to 101° or 102° on the third day, it may be inferred that the period of incubation is to be considered as extending over three or four days. On the fifth day after contact, which may be called the second day of the disease, there may be observed a temperature of 103° to 104°, a pulse varying between 60 and 70, general dulness, irregular shambling gait, injected mucous membranes and tumefaction of eyelids, more or less pronounced in character. The appetite may or may not be markedly impaired. On the third day of the disease the symptoms are greatly exaggerated; the temperature may be as high as 105°, or even 106·5°; the pulse 70 to 80, small, and in many cases scarcely perceptible; the mucous membranes purple or red. There is a discharge from the eyes, and frequently an opacity of the cornea is perceptible. Finally, accelerated respirations and total anorexia are to be noted. Extending from the third to the sixth day of the disease, more special symptoms, indicating, in all probability, extensive exudation into special tissues and organs, may be recorded. Amongst these, serious pneumonic symptoms, implicating large portions of one or both lungs (in some cases associated with pleuritic complications); enteric symptoms, including abdominal pain; intermittent action of the heart; extreme nausea; partial, or in rare cases total, loss of power in the hind quarters; violent diarrhœa; finally, though rarely, cerebral symptoms,—are most prominent; whilst death from asphyxia or collapse occurs. It is not, however, to be understood that the above characters are coexistent in all, or even the majority of patients. It seems that, as a general rule, the exudation takes place in sets of organs or tissues which may be considered to exhibit a co-ordination or similarity of functions; and where recourse is had to scientific treatment in the earliest stages, it may most emphatically be asserted that the onward course of the disease may be arrested, the severe symptoms prevented, and a more or less complete cure the favourable result.

A *post-mortem* examination invariably displays a characteristic congestion of the lungs, heart, or stomach. One or both

lungs may be thus congested, and as a rule hypertrophy of the heart is visible. In all the other parts affected there is an exudation of lymph, which is frequently especially marked in the submucous tissue along the whole course of the intestinal tract, between the folds of the peritoneum, and also in the brain and spinal cord.

Thus the name of Pneumo-enteric Fever has appeared to me an appropriate one, and I may be allowed to record my conviction that the disease is to be regarded as depending upon the presence in the blood of a specific virus, which produces in the first instance pyrexia, secondly, congestion of the heart, lungs, and stomach, and, finally, extensive infiltration, that is, exudation of the fluid portions of the blood into the most important organs of the body.

Horses in low condition, or otherwise debilitated, seem to be principally and most markedly affected. The disease, when appearing in strong horses, usually assumes a very mild form—the percentage of deaths is very small, only resulting in cases aggravated either by neglect, by being worked in the first stages, by bad treatment, by imperfect sanitation, or by a previously low condition of the animal due to other causes. Patients which have been treated at an early stage, and have had the advantage of good sanitary conditions, and a previously fair state of health, will very rarely succumb. The percentage of fatal cases should in such instances be very small.

In the most favourable cases, the temperature usually falls on the fifth day to about 103°, on the sixth to about 101°, being normal on the seventh. The gradual fall of the pulse is in about the same proportion. In less favourable cases the temperature will remain at about 105° for several days, finally, however, undergoing a rapid fall, with an almost equally sudden cessation of other symptoms. Where a fatal result is to ensue, the heart's action and the function of respiration become gradually more markedly impaired, until the animal dies in asphyxia at about the seventh day. Sometimes, though rarely, death from collapse at about the fourth day has occurred.

In conclusion, I must state my conviction to be that this disease is entirely different from Influenza; that it is, in fact, a

specific fever, with well-marked periods, and dependent upon the existence of a germ of a specific and contagious nature. The fixed period of incubation, the gradual rise of temperature followed, as a rule, by a similar gradual fall, the great severity of the general febrile symptoms, the characteristic exudations and congestions, with the total absence of inflammatory action, the probable dependence upon living microzymes, its highly infectious nature, together with its other symptoms, most distinctly differentiate Pneumo-enteric Fever from Influenza proper.

ACTINOMYKOSIS: A NEW INFECTIOUS DISEASE OF ANIMALS AND MANKIND.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

(*Continued from p.* 167.)

Johne and Vachetta point out that the periphery of the *Actinomyces* tuft is not always so symmetrical as Harz has represented, and my own observations confirm this remark. When closely examined, many of the club-shaped cells towards the periphery will be found standing out prominently from the

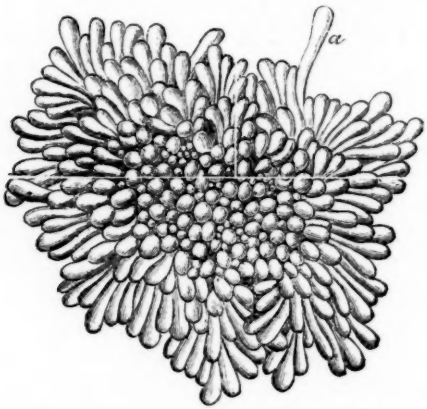

FIG. 9.—Unsymmetrical *Actinomyces* Tuft.

others, and measuring about 0·0019 mm. broad to 0·0740 mm. long (Fig. 9, *a*; Fig. 10, *aa*).

Here and there are some fine, pale, faintly shining, single mycelium threads springing from the depths of the tuft, and appearing beyond its margin (Fig. 10 *b*). Another tuft, or portion of one, mainly consists of such mycelium or hyphen-threads (as in Fig. 10 *b*). Very exceptionally, there are seen at the peripheral end of these fine threads, a delicate pear-shaped expansion (Fig. 10 *c*); and among them are larger pear or club-shaped cells, often crowded together (Fig 10 *d*); while not unfrequently are noticed isolated, and generally small tufts, which appear to be composed only of the very finest mycelia, and which Harz looked upon as aborted forms, but which Johne considers young growths. Within the zone of the tuft (as in Fig. 9), and especially towards the centre, are not only the upper surfaces or ends of the larger club-shaped cells visible, but also small shining corpuscles, which resemble micrococci (Fig. 10 *e*). In the centre of the tuft, in addition, are extremely fine, but not

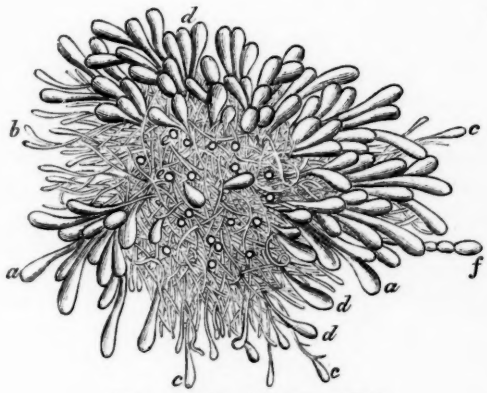

FIG. 10.—An *Actinomyces* Tuft.

very numerous mycelia; and beyond these, passing direct towards the periphery, are many mycelia with their extremity expanding into a long pear-shaped body (Fig. 10 *c*), which has received the name of Conidium, and of which there is generally only one for each thread. In breaking up or pressing the tuft, the conidia are very easily detached in the shape of conical or

pyriform bodies, with in many instances the narrow end much elongated. The mycelium is irregularly branched, two or more conidia growing from each by means of their narrow extremity, something like a bunch of grapes (Fig. 11

FIG. 11.—Mycelium and Conidia of the *Actinomyces.*

The various forms the conidia may assume are shown by Johne, Ponfick, Harz, and Israel; but the most diverse opinions are entertained as to the development and growth of the fungus itself.

It is probable that when the fungus-tufts become calcified, as they are often found to be, their growth has ceased, and they can no longer fructify.

Culture experiments have hitherto not been very successful, so that we are still in the dark as to the process of, or length of time necessary for, development. Clinical observation and experimental inoculation, however, would go to prove that spon-

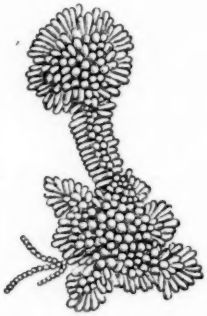

FIG. 12.—Fragment of barley, with clusters of Conidia of the *Actinomyces.*

taneous or accidental Actinomykotic tumours take longer to grow than those which are experimentally produced.

Israel was of opinion that the mycelium of the fungus obtaining access to the tonsils of mankind and there producing germs or spores, gave rise to Actinomykosis; and Johne believes he found corroborative evidence of this in making a careful examination of the tonsils in the section of a pig's head. Externally, these appeared quite healthy, and on pressing some of the glandulæ only the ordinary turbid mucus fluid they usually contain was expelled; but from others there was expressed a yellow, thick, grumous matter, something like pus, and which on examination by means of the microscope was found to have a very great number of *Actinomyces* tufts of various sizes and in different stages of development, some of them even calcareous. A section of the amygdaloid cavity showed that it was much dilated, and its lymphoid tissue normal, as a rule; only in some preparations of the part did this tissue appear infiltrated with small cells. In some of the glandulæ were small, delicate, but rigid vegetable particles, which were for the most part fragments of corn or barley husk; and on close inspection there were perceived, either on the surface of these particles or clustered on the beard of the barley, with few exceptions, crowds of pear-shaped hyphenless conidia (Fig. 12) which in form, size, etc., differed in no respect from those found in the Actinomykosis nodules.

Johne subsequently examined the tonsils of twenty-four pigs which were apparently quite healthy, and with only two exceptions found them free from these fungi. He could never discover them in the tonsils of cattle.

Pathology.

There can scarcely be any doubt as to the etiology of Actinomykosis. The *Actinomyces* is constantly found in new formations of a special kind, and through its irritating and disintegrating influence it not only produces these formations, but sets up destructive processes in the tissues in which it may locate itself; and sooner or later, unless it loses its power or is removed from them, it causes their death. An *Actinomyces* tumour must, therefore, be looked upon as what German pathologists designate an "infection tumour," and Actinomykosis as an infectious disease.

As has been said, the tumours offer certain distinctive characters, and all tumours possessing these characters contain the fungus. Externally these growths, be they large or small, present various appearances; but they are generally round, lobular, or fungiform in shape, smooth on the surface, and soft in consistency, like the polypi-sarcomata, or somewhat hard, like the fibro-sarcomata or fibromata. In colour they also vary—the latter being of a greyish-white, or light-yellow tint; the former are darker, less vascular, and often stained by blood extravasations. Studding the surface, and particularly in the softer variety, are generally seen a multitude of small, very yellow nodules, whose presence is really a diagnostic feature. On section, the typical character of the Actinomykoma is best displayed. Imbedded in the fibrous stroma of the growth are noticed the various-sized nodules, more or less numerous, small and isolated, or in confluent rounded masses the size of a hazel or walnut, grey or yellow in colour, of a cheesy softness, and in the very smallest of them are a number of minute particles or centres, sulphur-yellow in tint, which are the clusters of the *Actinomyces*. If one of the cheesy masses is submitted to pressure or teased out, these particles—which resemble Lycopodium seeds—are slightly separated from the matter around them.

The majority of these are soft, something like tallow; others may be gritty to the touch, when they are impregnated with lime salts. Whether occurring in animals or man, these peculiar particles must always be considered diagnostic of the disease, even without the aid of the microscope.

When the nodules are removed from the connective-tissue stroma, this is found to be cavernous in its structure, from the large number of small cavities they occupied—another characteristic feature of the tumour.

I have already alluded to the histological characters of the nodules.

As to the manner in which, and channel by which, the fungus invades the tissues, there is no satisfactory evidence. It is, however, extremely probable that it enters, in the form of spores, through a wound, abrasion, fissure, or even by means of the

delicate mucous follicles of the membrane lining the lips, mouth, pharynx and nostrils—in fact, any part of the digestive or respiratory canal. It has been shown that it may exist harmlessly in large numbers in the tonsilar glands of the pig, probably waiting for a casual abrasion or removal of the epithelium, in order that it may rapidly develop in the tissues beneath.

This injury may be inflicted in many ways, and very likely by the food upon which the animals most liable to the disease are fed. I am informed by a practitioner in Lincolnshire, that the malady is most frequent after cattle have been fed on straw, barley, and chaff; and this may not only injure the mouth, but serve also as the vehicle for transmission of the fungus—straw being so often mouldy, and infested with vegetable parasites of various kinds.

The species of animal invaded by the *Actinomyces* appears to have much influence on the pathological results. In man the tendency is to suppurative processes and metastatic abscesses; while in animals it is to new-formation tumours, and induration or degeneration of tissues—be they hard or soft; the extension of the fungus being progressive by means of its spores, which are disseminated, localise themselves, fructify, and produce the characteristic changes in their surroundings. These spores may find their way into the œsophagus, stomach, and intestines, or into the bronchi and lungs, aud there fructify.

That the disease is transmissible from one animal to another, there is now no reason to doubt, as the fact has been experimentally demonstrated by Johne and Ponfick. The experiments of these and others had previously failed, probably because the inoculation material was too old and had undergone change.

Johne subsequently employed quite fresh material, and was successful in three out of four experiments—the animals being two calves, a cow, and a foal. The latter remained unaffected. The calves were inoculated subcutaneously behind the lower jaw, and elsewhere, and a small quantity of the same material, which was derived from a tumour on a living cow, was also introduced into the peritoneal cavity. In one case death took place forty days after inoculation; the calf having lost its appetite, became emaciated and debilitated, and then succumbed. At the

XUM

seat of inoculation, as well as in the abdomen, Actinomykosis was markedly developed. In the second case, death took place 114 days after inoculation, and the results were found to be as marked as in the other instance.

The third case was a pregnant cow, which gave only a small quantity of milk. This animal was inoculated through the milk-duct of the teat. The inoculation was in a few days followed by inflammatory œdema, which soon became developed into phlegmonous Mastitis. Without any treatment the inflammation subsided, but there remained a small hard swelling, which increased so much that in three months the quarter of the gland was double its normal size, and felt like a hard fibroma. No milk was secreted. The cow was killed 133 days after inoculation, and in the udder were discovered all the signs of Actinomykosis: diffuse fibroma, with, in various parts, multiple spongy fibro-sarcomata, the interspaces of which contained the characteristic nodules or "granulation tissue," enclosing the fungus.

Ponfick did not succeed in inoculating dogs or rabbits. He endeavoured to produce the disease in cattle, by feeding them with infective material in the form of fresh nodules, but the results were negative. By subcutaneous inoculation and intravenous injection, however, he was completely successful, and the lesions of the former were similar to those in Johne's cases. Injection of the material into the jugular vein produced, in the course of two or three months, typical new formations in the lungs. The details of these experiments are very interesting, and I regret I cannot transcribe them here. But they conclusively prove that the artificial production of the disease does not alter in any way its characters.

There is no record of any instances which might tend to show that the disease may be accidentally transmitted; though the fact that it is inoculable leads us to suppose that it may be conveyed from one animal to another, from one man to another, or from animals to man, and *vice versâ*.

Ponfick relates the case of a woman, thirty-four years of age, who was attacked by the disease, and who had been for several years employed as a servant, in which position she was frequently among sick cattle, and these were affected with what the

veterinary surgeon who attended them called "wurm"—the popular name in Germany for the malady under consideration. This is the only case of probable transmission recorded.

Now, however, that attention is likely to be directed to the disease by veterinarians and surgeons, we may be able to note its accidental transmission from diseased to healthy animals, and to mankind.

(*To be continued.*)

DISEASE IN HORSES' FEET RESULTING FROM THE USE OF GERMAN MOSS LITTER.

BY J. ROALFE COX, F.R.C.V.S., LONDON.

A PECULIAR disease affecting the feet of horses, consequent on the use of German moss litter, having come under my notice, I propose to relate the particulars; and it will be interesting to learn, through the pages of the VETERINARY JOURNAL, if a simila result has occurred in the experience of others.

A fair trial was given to the moss litter in the stables of a large London brewery where I am professionally consulted.

The stud comprises about 140 horses, and by degrees the litter in question was being used to about half the number.

The frequency of a peculiar disease of the horses' feet led, in our investigation, to the discovery that all the cases were occurring in that division of the stud in which the moss litter was exclusively used, and not any cases of the kind affected the horses being littered with straw.

The moss litter being discontinued now some months since, no fresh cases of this disease have been observed.

Tenderness in the feet was first noticed, and on examination the horn of the sole and of the frog was found to be peculiarly softened; it afforded a yielding sensation to the finger not unlike that which is imparted by India-rubber; and on cutting the altered horn it was almost as easily sliced as cheese-rind.

The outer surface being in this way slightly pared off, the deeper substance of the horn was discoloured by a pinkish stain.

XUM

The horn of the frog was in many instances found detaching from the vascular surface, which was very disposed to take on a diseased action somewhat allied to "Canker," and became extremely difficult to treat. The same destructive disease, in a less number of cases, also affected the structure beneath the horny sole.

Horses which were not lame, and specially brought under notice for treatment, were stopped promiscuously from work for the purpose of examining the feet, and in these the same altered character in the horn was more or less presented.

It was a marked fact that the *fore feet* were much more frequently affected than the hind ones; and in reference to this, it may be remarked that the fore feet and shoes seemed to hold the litter more than the hind ones, whilst, too, they were more continuously standing in it, the hind feet being in position to stamp and tread the litter aside.

This may explain the predominance of the ill effect in the fore feet, the horses being kept in stalls.

The altered horn had the appearance of having been acted on by some chemical agent, and whether this was in the article itself, or due to its special mode of preparation, or to subsequent changes taking place under the combined influence of its decay and the retention of the urine, also undergoing chemical change and decomposition, further experience may elucidate.

It is not improbable that the quality or material of the moss litter may vary in different consignments.

CINERATORS AND SANITATION.

BY J. MILLS, M.R.C.V.S., A.V.D., LECTURER ON VETERINARY SURGERY AND MEDICINE AT THE AGRICULTURAL COLLEGE, MADRAS.

IN a country like India, where there are so many domesticated animals, the proper disposal of the dead seems to me a question of paramount importance, although one evidently much neglected.

By burial, however deep, certain parts of the country in time must become more or less contaminated, and the atmosphere

rendered impure and unhealthy, and dangerous both for man and beast to live in.

Burying is, without a doubt, the most insanitary mode of getting rid of the dead, and one which ought to be put a stop to, where practicable, by Government, and even the institution, if necessary, of stringent laws on the subject. Although, perhaps, they might infringe on the private rights of the population, that consideration must be set aside when, through improper sanitation, the lives of human beings are in danger.

I would strongly recommend the building throughout India of cinerators, according to my plans, not only for the purpose of cremating or reducing to ashes the carcases of animals that have died from such diseases as Anthrax, or have been destroyed for Glanders, but also for getting rid of all refuse or objectionable matter, such as dressings from wounds and sores, and the stable litter in stations where it cannot be utilized as manure, and where its accumulation becomes objectionable.

I am perhaps late in bringing this subject to notice, but, it is to be hoped, not too late to do some good, for I see no better or more effectual mode of getting rid of diseased germs than by fire; and, in fact, it is clearly evident that this is the only true way of preventing the spread of contagion.

The disease germs of Anthrax (one of the most fatal animal scourges we have in India, and one whose increasing prevalence, no doubt, is due to the burial instead of the cremation of the dead), says Pasteur, can travel long distances through the medium of earth-worms, and retain their vitality for a very long period. Is it not enough, therefore, on such authority as his, for us to use proper and thorough means for the destruction of these germs, and in that way to remove the cause of the disease, as, while the cause exists, the effect will never cease?

In various parts of India, where we hear of outbreaks of disease amongst men and animals, we should ask, What are the causes? Might they not be due to the absence of proper measures for the disposal of infective matter? But, whether such be the case or not, I should like very much to see cineration get a trial.

Cinerators ought to be erected near all hospitals, cholera camps, sick lines for animals, and bazaars, for the purpose of

XUM

burning everything likely to convey disease, or to prove insanitary.

As regards the question of fuel for those for hospital use, in all stations where there are horses it would be an easy matter to get a load of stable-litter, which I find answers the purpose well.

Now, as to the cost of building. A cinerator made of mud or clay (a small one), would cost only Rs. 8 or 9, and a large one, for cremating animals in, Rs. 16 or 18; therefore, on the score of expense there can be little objection to them. Clay is, of course, much to be preferred, as it forms a firmer and more permanent wall, and less likely to be affected by the rains than mud, and in stations where it is procurable I would strongly recommend its use. If they are to be constructed of brick, then we come into the subject of expenditure, which is always best to be avoided; but, from two years' experience of the mud ones, I find they serve every requirement. They can be easily and readily put up, without the aid of skilled labour and at a trifling cost, which is no small item in their favour.

To show what can be done with these cinerators, I have been able, during the outbreak of Glanders and Farcy at St. Thomas' Mount, to cremate the carcases of eleven of the horses destroyed for the disease, and at Secunderabad I disposed of the carcase of a horse that died from Anthrax in the same manner. The average time occupied in reducing them to ashes was about twelve hours per horse, and with no other fuel than stable-litter. I think this is sufficient evidence of their utility, and I cannot help remarking that I look upon the above evidence as most satisfactory, as I have been able to effectually dispose of the carcases of these animals with incurring but little expense to the Government, and saving the district from probable contamination by burial; and it also tends to illustrate how far many of the sanitary evils which now exist are subject to human control.

Of course, cremation may be made much more speedy by the aid of wood, but I do not see that it is at all necessary, as the stable litter consumes the carcase quick enough for all practical purposes.

It requires very little consideration to see that the cineration of diseased matter is but a rational means for the preservation of health, and the prevention of epidemic afflictions.

Site.—The site for building them on should be selected where as much draught is procurable as possible, and where the smoke from the cinerator will not become a nuisance, or in any way interfere with the public health.

Building.—Where clay is not procurable, the wall must be made much thicker, especially at its base—in fact, to stand any time, it ought to be made nearly double that of a clay wall.

After the foundation is constructed, allow it to set for some days before beginning the superstructure, then build the first 3 ft. of the wall, and allow that also to thoroughly harden before placing the stones on which are to form the top or arch of the vent-holes. After this you may build as circumstances will permit, care being taken not to be in too great a hurry.

I find the best men to employ as builders are horsekeepers, as, although they are not skilled labourers, and require a good deal of watching, still they are well up in the erection of mud buildings.

A good foundation for the steps, is a few loads of stones or large boulders.

When the cinerator is finished and thoroughly dry, it ought to be well "laped" over, and this operation repeated weekly, after all the cracks in the wall have been filled up.

Rules for its use—1. In filling the cinerator for the first time let as much straw as can be spared be placed in the bottom so as to give the fire a start, and then gradually fill it up, and when half full, ignite the straw at the vent-holes. After the walls are thoroughly heated any material will burn.

2. Care must be taken to keep the vent-holes *well* cleared of ashes, to prevent *choking*. This can be done by having a rake or fork, etc., made and secured to the end of a long bamboo.

3. Clear the cinerator entirely out every fortnight or three weeks, so as to make any repairs to the walls which may be necessary.

4. For cremating a carcase, fill your cinerator about three parts full with litter, place the body on either whole or in

XUM

pieces, and cover over. From time to time supply plenty of fuel, to ensure the thorough cineration of the carcase.

5. During the rains, have a large tattie made to place against the side on which the rain is beating, and construct a trench round it to prevent inundation.

Remarks.—As regards the building of the brick cinerator, that, of course, must be left to those who make such work their profession. I have never had the opportunity of seeing one at work, but have no doubt they would answer the purpose well, and if at all practicable they ought to get a trial. Of course, the cost of construction will, I am afraid, debar them from becoming generally used, except in large stations, where one of them might be built for cremation purposes, for the common use of all the troops.

The ashes or charcoal from a cinerator I have found most useful to throw down in stables where animals have urinated, acting by absorbing the urine, and also as a deodorizer. All that is required are a few heaps of the ashes distributed throughout the stable, so as to be readily got at by the syces.

In conclusion, these cinerators, like everything else, if we want them to succeed, must be personally superintended, both in the building and in the working of them, as, if left to others, carelessness will probably bring them into discredit and eventual disuse; but after two years' experience of them, and having spent a good deal of time and trouble in bringing them to their present state, I can confidently assert that, if built according to the plans I have submitted, and worked as laid down in this report, they will be found valuable agents in a sanitary point of view.

With the photograph accompanying this report, it will be observed that a derrick and tackle have been brought into use, to lift the carcase into the cinerator, but as the purchase and upkeep of this mode of working would be somewhat expensive, which I wish particularly to avoid, and not always available, I have invented a ramp and platform, so as to entirely do away with that arrangement.

The ramp is at a gradient of 1 ft. in 5, which will not be found excessive. It is broad enough for a cart to be driven up it, which, when on the platform, can be turned round, tilted up, and the

carcase, or anything else it might contain, slid into the cinerator. The platform I have designed as a place, where, when an animal is to be destroyed, he can be shot close to the mouth of the cinerator, and then rolled in without trouble, and also as a place where, when animals die, all *post-mortem* examinations ought to be made, which seems to me highly essential, because it is undoubtedly a bad and unsafe practice to allow these examinations to be made in the vicinity of sick lines or stables.

The two-foot wall on ramp and platform is put up for the purpose of preventing the animal, when in the act of falling after being shot, from getting over the side. This wall I find to be necessary, because a few days ago I shot a horse on the ramp, on which he fell, but the greatest difficulty was experienced in moving the carcase in, as in rolling it over the head or hind legs were always getting over the side, which caused a certain amount of delay, with the risk of its slipping off the ramp altogether.

So as not to make the ramp and platform too high, which would have increased the gradient, I have taken a portion of the wall out opposite the stage, to bring the mouth of the cinerator on a level with it. This portion of the wall which has been taken out, will be found not to interfere in any way with the cremating powers of the arrangement.

The wall next the ramp must be straight, as it is only natural to infer that, if inclined inwards the mass of earth behind it will bring it down.

In constructing on this plan, build your ramp first, and allow it to be thoroughly dry and hardened before beginning your cinerator, as, if not, the ramp is liable to give way and bring the whole to the ground.

This arrangement dispenses with one vent-hole, but I find three are ample, as I have had two cinerators working on this system for some time, and they do well. Of course I wish it to be clearly understood that this artificial ramp is not to be erected when a natural one is to be found, either on the face of a hill or some other rising piece of ground; but as that is not always procurable, I submit this plan to overcome the difficulty. Some may think that it is difficult to get a horse to walk up on

XUM

to the platform to be shot, but I have never encountered the slightest trouble yet in getting the animal close up to the cinerator, as he, unlike man, suffers no mental agony, being in utter ignorance of what is about to take place.

Since writing my first report on this subject, I have seen the bodies of some human beings cremated by means of bratties or dung-cakes, which are most effectual, simple in the extreme, and inexpensive, and which might with advantage be made applicable to the disposal of the carcases of the lower animals, more especially when it might be impracticable and unnecessary to build a cinerator, in such instances where a regiment or battery were on the march, or when a sudden outbreak of disease gave no time to erect one.

These bratties can be bought in the bazaars for about two annas per hundred. But when a regiment or battery is in a station, these bratties ought to be made up by the sick line syces in their spare time, and stored away in stacks, so as always to be ready for use when required. The way I saw them used was, a pile was made of the bratties, about one and a-half feet high, then the body was laid on, and more of them (the bratties), placed over it, which formed a regular mound; the whole was lit from below, and in a very short time little was left but ashes.

With the carcase of an animal, of course, the difficulty would be in getting it on the pile; but I think if it was simply laid on the ground and well covered with bratties, and lighted, that cremation would rapidly take place. Of course, if a hole were dug, say 6 by 4 by 2, and filled with dung-cakes, the carcase placed over them and well covered there would, no doubt, be a saving in fuel.

THE SYSTEM ADOPTED BY THE GOVERNMENT OF INDIA FOR THE IMPROVEMENT OF HORSE STOCK.

BY A. E. QUERIPEL, M.R.C.V.S., A.V.D., ASSISTANT-SUPERINTENDENT, HORSE-BREEDING DEPARTMENT, PUNJAB, INDIA.

SINCE the abolition of the studs, Government has recognised the necessity of endeavouring to obtain an indigenous supply of

horses, and very wisely has decided to leave the matter entirely to private enterprise, supplying, however, for the use of the farmers, stallions calculated to improve the breed. In 1876, the Department of Horse-breeding Operations was formed. The duties of the officers of this department may be summed up in a few words. They visit each district of their respective provinces, and at different centres, having previously circulated notices, all the mares are collected; these are carefully inspected, and such as are not possessed of any hereditary disease, and are otherwise calculated to breed remounts, are then branded with some distinctive mark, varying in the different provinces. These mares are then allowed the services of the Government stallions gratis, and without the brand no mare can be served. The most important duty is, however, the selection of such class of stallions for each district as will be likely to mate well with the mares of that particular district. These may be looked upon as the most important duties to be performed. There are, however, many minor ones, all of which are essential to render horse-breeding a success. Amongst these should be enumerated the education of natives, especially in the matter of rearing of young stock. The native of this country is, perhaps, one of the most conservative of mankind; and no matter how palpable an error is, it is most difficult to eradicate, as the reply invariably is that his forefathers always did so. For example, spiked bits have always been used; and although an Englishman finds but little difficulty to accustom a country-bred horse to a plain snaffle, yet a native will seldom believe that the animal could be held with anything but the sharpest and most severe of bits. Again, owing to the risk which formerly existed of their young stock being stolen, natives have been accustomed to tether them in every conceivable way. Formerly, also, it was considered that castration reduced the powers of a horse. It will be at once seen that until these notions have been eradicated from the minds of the zemindars, or farmers, horse-breeding, or rather the rearing of young stock, would be an impossibility. Time, however, is rapidly showing them that if they wish to compete successfully in the horse-market they must adopt the advice given to them, and nothing has tended more to the circulation of good advice

than the pamphlet in Urdu, written by Inspecting Veterinary Surgeon Meyrick, which, with the sanction of Government, has been issued gratis to the owner of every branded mare. It is pleasing to find that castration is fast developing, especially in the Punjab. For example, in the district of Dera Ghazi Khan, 154 colts were castrated last year, and before the formation of the Horse-breeding Department it was always customary to destroy every colt at birth. Again, runs, some of large size, also paddocks, are rapidly springing up in nearly every district. Young stock, therefore, brought up on the liberty system cannot but improve.

Stallions.—At present there are about 305 employed. Of these 115 are located in the North-western Provinces and Rajputana, and 190 in the Punjab. The following will show the classification on 1st April last, since which time some have been disposed of:—

Thoroughbred, English	74
Norfolk trotters, including half-breds	127
Arabs	72
Stud-breds	36
Miscellaneous	6
	315

The English horses, both thoroughbreds and Norfolk trotters, are purchased and sent out by the troop-ships to India. The purchasing may be looked upon as one of the main faults of the system. Firstly, in the price paid. With regard to this, it would appear that about £350 is the maximum paid for thoroughbreds, and for this amount really good sires of this class cannot be obtained. The result is that horses of this class are frequently received which can but be looked upon as weeds, and which should never be used as sires. Secondly, in purchasing, the main faults to be corrected in the mares should be borne in mind. These may be enumerated as want of bone, badly-shaped fore legs and hocks, want of barrels, and deficiency in muscles of quarters and thighs. The thoroughbred weed will not counteract the want of bone, but, on the other hand, it should also be remembered that the very big coarse Norfolk trotter will

not "nick" with the mare of this country, the average height of which is 14.2. The well-bred Norfolk trotter, and what is understood by the weight-carrying hunter, that may only have a slight stain in his pedigree, are horses that are greatly required in this country. Arabs, again, are obtained of a very middling stamp. The best of this class of horses are bought up immediately they land in Bombay, and even when sent for Government purposes direct from Turkish Arabia they are very frequently not fit to be used as stallions.

The above would point to the necessity for the most careful selection of sires; for, as has been frequently urged, none but the very best should be used, otherwise, in using second-rate ones, we are losing most valuable time.

Mares.—The mares of this province (Punjab) vary very much in the different districts, and therefore, as before remarked, the greatest care has to be taken in the selection of sires that are likely to "nick" well. These mares are of a hardy nature, capable of undergoing very great exertion on little food, and that of a coarse description; in fact, it would be difficult to imagine any animal that could do as much. During the Afghan war, ponies were frequently seen that had drawn "ekkas"—light vehicles on two wheels—with three or four men in them, from Rawalpindi to Jelum, a distance of sixty-seven miles, in from twelve to fourteen hours; and occasionally one pony has been known to do this distance in eleven hours. With this to work upon, I have no doubt that time will prove that the northern part of India can breed as good a description of horse as can possibly be wanted for army purposes. Of selected and branded mares, there were on 1st April as follows:—

Punjab	7,596
North-western Provinces	4,249
	11,845

With this large number of good mares, remounts could easily be obtained for the whole of the Bengal army; and this leads to the consideration of the question as to the age at which they should be purchased. On the abolition of the studs, it was decided by Government that the zemindars, or farmers, should

rear their young stock, and that when of sufficient age to become remounts they would enter the market, and purchase those considered fit. In this, however, a grave error was committed, inasmuch as the natives were unaccustomed to rear their young stock in any but the most primitive fashion, and in this way many a thoroughly good youngster has been ruined. As has been previously shown, many of their mistaken notions are being eradicated; but still the breeders are not as yet, speaking generally, sufficiently educated in rearing young stock to be left entirely to themselves; and therefore the purchase of any good colts or fillies that may be seen by the purchasing agent at eighteen months of age is strongly advocated; for up to this age they are seldom, if ever, tied up, and therefore no mischief is done. These youngsters should then be placed on good grass runs, and should in no way be interfered with until they are at least three and a half years of age, when they might be taken up and got ready to be sent to regiments and batteries. One of the mistakes which evidently existed in the old studs, and which caused much mortality, would of course have to be avoided—the collection of a very large number at one place.

In order to further encourage horse and mule breeding, the Government of India has inaugurated a number of horse-shows, which are held in different districts of both North-western Provinces and Punjab. At these fairs Government prizes are awarded. During the official year 1881-82 the sum of Rs. 18,200, or taking the rupee at 2s., £1,820, was sanctioned for prizes in the latter province. For these prizes, 6,637 competed in the Punjab, and much of the young stock exhibited was of very great promise. These horse-shows also serve the purpose of forming the horse-marts of India. Here all purchasing officers collect, and frequently the competition is most keen. I must explain that the horses of the native cavalry regiments are the property of the "sowars," or troopers, and each regiment sends its purchasing officer to obtain remounts.

That the present system is one which will ultimately succeed there can be but little doubt; in fact, in districts where the system has been in force for five or six years the improvement of the horse stock is most marked. We can, however, better

judge of the success when we see the remounts of the various native cavalry regiments, and especially when we compare them with remounts that were obtained a few years since. The advantages to be derived from this system are so great that they need scarcely be enumerated. Amongst the greatest must, however, be reckoned the fact that the money which hitherto has been sent out of the country yearly for the purchase of horses, as horse-breeding develops, will find its way into the farmers' pockets, and their prosperity will be greatly enhanced. There are, however, many points which must be considered, and which should be borne in mind by Government. Amongst others—

1st. That to succeed in horse-breeding, none but the best sires should be obtained.

2nd. That to render the system a success, every assistance should be afforded to the farmer. Allusion is not now so much made to pecuniary aid as to advice; and therefore it is impossible to expect one man to superintend horse and mule breeding operations in a province the size of Great Britain, especially when it is considered that there are 191 horses and 141 donkey stallions located at 90 different stands, and that there are nearly 8,000 brood mares, not reckoning fully the same number set aside for mule-breeding in the Punjab alone.

3rd. That the system should be made as little irksome as possible to the farmers, for they are of such a disposition that they would rather forego the advantages of obtaining the services of Government stallions than be hampered by a lot of rules and regulations.

Allusion has been made to mule-breeding. This forms one of the most important duties of the Department of Horse-breeding Operations. During the Afghan war, it was clearly proved that for hill warfare the mule was by far the best beast of burden; and the Director of Transport with the Indian Division during the late Egyptian campaign speaks highly of the work performed by the Punjab mule, which certainly is an animal capable of undergoing the greatest exertion on little food. Therefore the breeding of such, as also of mules adapted for batteries of mountain artillery, is extensively encouraged.

For this purpose Government supplies good donkey stallions gratis. These consist mainly of Arab, Spanish, French, and Italian animals; but very good stallions are at times obtainable from Bokhara, and by encouraging the breeding of good donkeys Government has lately been able to obtain really good country-bred ones. In this way a great impetus is given to mule-breeding, and the Government of India will also derive great benefit from the system, as by increasing the number of mules foaled good serviceable animals of this description will be obtainable at a reasonable price.

Editorial.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE report of the meeting and publication of the balance sheet of the above society, which appears in the Journal for this month, will, it is earnestly hoped, attract the serious attention of those who do not yet belong to it, and who, though deeply engaged in professional duties, should not overlook or ignore the claims which it has upon their philanthropy. Of the objects of the society it is needless to speak; its designation is sufficiently explanatory of its functions, and they appeal to every one who is animated by a feeling of professional fraternity and benevolence. The efforts of an individual to afford relief to the needy, or aid in defence, may be feeble or futile; the combined efforts of a number of individuals will effect much. In a profession like that followed by the veterinary surgeon, there is great need for mutual succour and support. Though many may make a respectable livelihood, yet there are comparatively few who can, in a certain number of years, save so much money as to provide for their families in case of death—many, we fear, after long years of unremitting toil, have but little to sustain themselves, their wives, and children. And the veterinary surgeon is, perhaps, more exposed to accidents and disease in the practice of his calling, than any other professional man. So that what between his oftentimes slender income, barely sufficient to meet every-day demands, and the risks and dangers he has to encounter, it is not to be wondered at that cases occur in which the families of worthy men are suddenly left destitute; and appeals for aid do not always meet with that response which would drive the wolf from the door. It is these cases which the benevolent society more especially takes up, and no society could have a more praiseworthy or sacred mission. It deserves the warm encouragement and liberal contribution of every member of the profession, and our reference to it now is to point out the great good it has already done with the small means at its disposal, the much larger area over which its benefits would extend if

its funds were larger, and the strong claim it has upon every one who lives by the practice of veterinary surgery. The subscribers to the society are few, far too few, when compared with the number of practitioners in the United Kingdom, and it is to be hoped that the next balance sheet will testify to a large accession. A small annual contribution from every member would annually amount to a considerable sum which, well applied, would solace the aching hearts and calm the anxious minds of those who, through misfortune, are rendered worse than poor.

Mutual defence is imperatively necessary in the veterinary profession. From no fault, omission, or lack of skill, a practitioner may be held liable for the loss of, or injury to a patient, and sued, or threatened to be sued, for compensation. To defend himself may be a most costly business—may, in fact, signify ruin to him, not only in purse, but in reputation. In such instances mutual assistance would afford that protection which innocence should always receive, and might possibly avert an unjust verdict.

With these purposes in view, the society deserves, and should receive, every possible support. None know what help they or theirs may need; and professional brotherhood should in nothing be stronger than in its manifestation of active sympathy with those who are in danger or distress.

THE COMPARATIVE PHYSIOLOGY OF MENSTRUATION.

BY ALFRED WILTSHIRE, M.D., F.R.C.P. LOND.

THE comparative method of study is, before all, the most trustworthy help towards the attainment of accurate knowledge, since, by its aid, a just appreciation of the relative value of facts may best be acquired. Accordingly, it merits employment whenever available, furnishing an efficient corrective of erroneous or disproportionate conceptions. It is valuable, also, inasmuch as it may afford clues to, or enlighten us respecting, important correlations; while its influence, in checking and balancing our views and conclusions, is uniformly beneficial. Acquaintance with the value of this method has led me to regard certain departments of medicine by its light, and among them the function of menstruation, in the elucidation of which it contributes important and suggestive information.

The illumination thrown by the comparative method upon certain biological problems ancillary to medicine is great; and the fervent, if not sanguine, hope is excited, that not only may similar enlightenment be vouchsafed in respect of recondite pathological problems, but that, through the pursuit of this instructive method, medicine, considered in its entirety one of the noblest studies, may, in process of time, be established upon foundations whence it may rise to a position not inferior to that accorded to other sciences.

The impression has long and widely prevailed, that the menstrual function is an attribute peculiar to the human female. Whether this be erroneous or not, will appear when inquiry is made into the manner in which the periodical activity of the reproductive organs is displayed or exercised in the females of the lower animals. Making due allowance for generic peculiarities, this function will be found to agree with others of the animal economy, in displaying harmonious subordination to the law of evolution. Inquired into on this

basis, and in accordance with the comparative method, the evolution of œstro-menstruation is discovered to be orderly; and to correspond broadly with the evolution, anatomical and physiological, of the generative system of animals. In harmony with the universal result of biological research, the primitive indications of the function will be found to be but feebly marked. Gradually and progressively, however, the manifestations become more and more distinct, until, ultimately, the highest stage is attained in the human species. Thus traced step by step, it will be found that, from feeble and obscure beginnings in the lower creatures, the function emerges and developes until, in the highest mammals, it is unmistakably pronounced. It will also appear that, after its establishment at puberty—an epoch marking the assumption of the capacity for reproduction, and usually arriving only towards the time when the rate of growth is diminishing—its equilibrium is liable to fluctuation, and even disturbance, owing to the extreme sensativeness of the reproductive system to vicissitudes of the environment, as Darwin and others have conclusively shown. It may be hoped that the laws governing this instability of equilibration will also be fully discovered, and, in process of time, admit of formulation, so as to render them amenable to remedial modification. Pursued and investigated on such a basis, there is a prospect that the physiology of the function may be brought within the domain of science, and cease to be a wonderment and mystery. It may also be hoped that the discovery of the physiological laws governing it will furnish, not only a foundation for the establishment of a sound and intelligent system of therapeutics, for correcting aberrations and remedying deviations, but also a more reliable basis than at present exists for pathological knowledge. Mr. Herbert Spencer well says (*Data of Ethics*, p. 277):—"Pathological science depends for its advances on previous advances made by physiological science. The very conception of disordered action implies a preconception of well-ordered action. Before it can be decided that the heart is beating faster or slower than it should, its healthy rate of beating must be learnt; before the pulse can be recognised as too weak or too strong, its proper strength must be known; and so on throughout. Even the rudest and most empirical ideas of diseases presuppose ideas of the healthy states, from which they are deviations; and obviously the diagnosis of diseases can become scientific only as fast as there arises scientific knowledge of organic actions that are undiseased." The gain accruing from accurate physiological knowledge may thus be great, and ever growing.

So conspicuous a manifestation of sexual aptitude as a menstrual flux, whether sanguineous or not, is hardly to be looked for in the females of classes below the mammalian, with which the study of the evolution of the catamenial function might appropriately commence, for "in the classes of birds, fishes, and oviparous reptiles, there is no uterus" (Laycock). But there are generative canals, out of which, in the process of evolution, the uterus arises, just as does the bladder out of the renal excretory canals; being developed by the aggregation of muscular fibres, and differentiation of epithelial elements at certain parts (like the stomach, with its powerful muscular and glandular apparatus in the higher mammals, or the gizzard in the fowl); and it may be useful to trace their evolution, for, even in certain non-mammalian creatures, the excitement attending the active exercise of the reproductive function is occasionally displayed by an increased vascularity and pigmentation of certain to structures, particularly about the genital orifices, which exhibit a kind of efflorescence at the periods of sexual excitement. For instance, according to Pouchet, "Guersant says that, at the epoch of the oviposit (in fishes), the orifice of their sexual apparatus swells, and is clothed with a red tint. Savants who, like Spangenberg, are occupied in studying the genital organs of birds, have recognised that they experience also at the time of the oviposit a manifest excitement." I am informed that the genitals of the parrot and

pigeon tribes show this excitement. In other creatures, *e.g.*, amphibia, the orifices of the generative canals opening into the cloaca are generally increased in size at the breeding season. Reptiles also show increase in cutaneous secretions, especially of the odorous variety, in association with sexual activity. Laycock observes: "Many tortoises smell of musk, which probably proceeds from follicles connected with the cloaca. Several lizards, among others the iguana, have a row of small follicles with round orifices at the inner side of the thigh, which secrete, especially at the coupling season, an odorous fatty liquid;" and Mr. Darwin (*Descent of Man*, p. 352) says: "During the breeding season, the anal scent-glands of snakes are in active function, and so it is with the same glands in lizards." As we ascend in the scale of creation, we shall find that the genital apertures of the higher creatures present analogous phenomena, culminating in the highest even in an issue of blood.

Attention may here be directed, *en passant*, to the general relations of pigmentation to reproduction, which are striking, and, as Mr. Darwin has shown, are in birds remarkable. He says (*Descent of Man*, p. 229): "Many birds acquire bright colours and other decorations in the breeding season alone;" and (p. 496) "certain ornamental appendages become enlarged, turgid, and brightly coloured during the act of courtship." Even in insects, sexual pigmentation is often highly conspicuous; and Mr. Darwin (*Ibid.*, p. 265) says: "The sedentary annelids become duller-coloured, according to M. Quartrefages, after the period of reproduction; and this, I presume, may be attributed to their less vigorous condition at that time." We may therefore derive instruction from the observation of the suggestive phenomena accompanying the active exercise of the reproductive functions, even in the lowest creatures.

Before the difference of sexes arises, both sexual elements (sperm and germ) exist, and are carried in the body of a single individual, though, curiously enough, the congress of two separate individuals is in some cases necessary for fertilisation, *e.g.*, in creatures which are not stationary.

Gegenbaur (*Elem. Comp. Anat.*, p. 54) says: "All those animals which unite in themselves both kinds of productive organs are known as Hermaphrodites. A separation of sexes is apparently foreshadowed in various forms, by the alternating activity of the organs, at the one time the egg-forming, and at another time the sperm-forming, organ exercising its function. Hermaphroditism is the precursor of sexual differentiation..... A separation of the sexes effects the whole of the organism, for it produces a series of changes in each sex, which effect organs that had primitively little to do with the sexual function;" and Darwin remarks, "It has now been ascertained that, at a very early embryonic period, both sexes possess true male and female glands."

Before generative ducts arise, the generative products escape from the bodies of the lowest creatures by a cœlomic orifice, and occasionally, even in this primitive stage, some excitement is displayed around the aperture; but in the stage immediately above, when ducts begin to appear, imperfect though they be, we find that there is a remarkable constancy in the relation they bear to the renal excretory canals; that, in fact, the generative products, having no proper canals of their own, make use of those of the renal system, and these often display pigmentation at their orifices.

According to Gegenbaur (*Elem. Comp. Anat.*, p. 609), "The germ-glands are developed from the structures known as genital ridges. Sometimes more and sometimes less of this ridge is converted into the ovary or testis." These genital ridges are found in the abdominal cavity, the epithelial investment of which "retains its primitive character along a tract which corresponds to the rudiment of the primitive kidney longer than it does in

other regions; and this epithelial layer may be distinguished as the germinal epithelium."

In the lowest forms, there are no generative canals. "Both sets of generative products are passed into the cœlom, whence they reach the exterior by the abdominal pore.....In the Salmonidæ, the eggs are passed into the abdominal cavity, and are evacuated through the abdominal pore." Again (p. 53): "In their simplest condition, the products of the reproductive glands merely break away from the spot where they are formed, and pass into the digestive sac, or into the body-cavity, or even directly to the exterior. Gradually, however, ducts, which are often very complicated in character, are added on; it is probable that these ducts are not primitively connected with the germinal glands. Where these ducts can be seen to have any relation to other organs, these appear to be excretory organs, and have been altered so as to correspond to this function. It becomes a great question where the excretory ducts of the reproductive matter are not in all cases excretory organs."

When, having passed beyond the primitive ductless stage, inquiry is made into the origin of the excretory ducts of the reproductive glands, we find that they are furnished by the primitive renal excretory apparatus (archinephron), the organs which eliminate the nitrogenous excreta from the body—organs distinctly derived from dermal glands (Gegenbaur, p. 46). The primary archinephric duct divides into two parts, so that there come to be two canals. "One commences at the anterior abdominal orifice of the primary duct, and has no further relations to the kidney. This is the Müllerian duct" (*Ibid.*, p. 604). Müller's duct becomes, in females, efferent, or oviducts, portions of which are ultimately differentiated into uteri. (The other archinephric duct becomes the efferent duct of the kidney, or ureter.)

And the late Mr. Balfour, in his admirable work on *Embryology*, shows how closely related the excretory and generative ducts are in the vertebrata.

The basis for the generative and urinary ducts is formed by the segmental duct, which is the duct of the pronephres. These, he says, "are the most primitive parts of the vertebrate excretory system." The meso-nephros, or Wolffian body, is formed of glandular canals, which open in the body-cavity of the embryo. The segmental duct becomes, in many forms, divided longitudinally into two parts: one with segmental tubes, forming the Wolffian or mesonephric duct, the other the Müllerian duct.

The intimate relations thus indicated primitively between the urinary and generative organs, foreshadow a connection which persists even in the highest mammalia, a point remarked by Aristotle.

In the Amphibia, the Müllerian ducts form oviducts, opening separately into the cloaca. "It is generally increased in size at the breeding season; this results in its being thrown into a number of coils. In the oviparous species (Salamandra), the terminal portion performs the function of a uterus" (Gegenbaur, p. 612). A similar but more advanced condition obtains in the Sauropsida, the oviducts being large coiled canals, with mucous membrane set in longitudinal folds, which are most marked in the lower portion. This latter portion secretes the shell, the anterior part the albumen.

We find, then, that even in certain low forms, as in some of the foregoing, the orifices of the genital canals are apt to display pigmentary or vascular efflorescence at the breeding times. The stimulating influence of activity in the initiatory acts of reproduction upon pigmentation generally is remarkable and conspicuous throughout nearly the whole of the animal and vegetable world. The exquisite beauty of flowers is sexual, and in close alliance therewith is their perfume, often equally attractive.

The brilliant hues of many birds, fishes, etc., owe their existence to a sexual origin; and, as already remarked, the orifices, whence the germinal product escapes, are in some of the latter highly pigmented.

It is, however, with the Mammalia that our study of the comparative physiology of menstruation properly begins. They, as a class, are elevated above the other portions of the animal world by the endowment of a higher organisation in many respects, and particularly by the possession of organs conferring upon them their distinctive appellation; organs which we shall find to exist in correlation with certain developments of other portions of the reproductive system, as well as of the general system.

Gegenbaur (p. 615) remarks: "In the Mammalia, the generative apparatus undergoes great metamorphoses, owing to the further development of various portions of the efferent ducts and the formation of a number of accessory organs. In the female apparatus, these are largely correlated with the relations that obtain between the embryo and the maternal organism. As this is least marked in the Monotremata, they undergo the least amount of modification, and have therefore direct relations to the lowest divisons of the Vertebrata, and especially to the Sauropsida. The oviducts open separately into a sinus urogenitalis, which communicates with the cloaca. The lower end of the oviduct, which is distinguished by the greater thickness of its muscular wall, forms an uterus; but this merely corresponds to the structures which likewise function as an uterus in many Anamnia and Sauropsida."

With regard to the Monotremata, the lowest members of the mammalian series, but little information is available respecting the phonomena observable at their periods of sexual excitement. The class is now neither numerous nor widely distributed, and opportunities for inquiry have not been at my command.

Pouchet remarks of them: "Many of the lowest mammalia are ovoviviparous (*Ornithorhynchus paradoxus*, Blum.; *Echidna hystrix*, Cuv.), or produce only simple embryos (*Didelphys*), whilst all the others present the characters of most marked viviparity." They resemble birds in possessing a common cloaca, into which the generative, renal, and intestinal canals open. They have no vaginæ, and the uteri are rudimentary, affording no provision for the sustained growth and nourishment of the fœtus, which, like that of marsupials, is soon cast out.

In Marsupials (such as the kangaroo), the evolution of the sexual system is somewhat more advanced, there being no vaginæ, which, however, open into the sinus urogenitalis. The upper portion of each different duct forms an oviduct, while the next and thicker-walled portion forms an uterus. Gegenbaur says: "Each of the two uteri opens by a papilliform process into a portion, which from the exterior appears to be common to them both, and which is formed by the union of the two Müllerian ducts. A curved vagina is given off from this on each side (Didelphys), or the commencement of the tube is replaced by a cæcal sac which is pushed out backwards, and is usually, though not always, divided internally by a median partition; from this sac, the distinct 'vaginal canals' pass in a curved direction to the urogenital sinus (Halmaturus)."

My inquiries into the manifestations of sexual aptitude exhibited by the females of Marsupials, like the kangaroo, tend, so far as they go, to support the hypothetical conclusion to which my researches had already led me, namely, that in accordance with their lowly position as mammals having inferiorly evoluted sexual organs, they would display comparatively slight and inconspicuous local evidences of the rut or "heat."

Kangaroos are known to breed in this country; and although certain gestative phenomena are still shrouded in obscurity—*e.g.*, the mode of transference of the immature embryo to the marsupial sac, which, according to

Owen, occurs in Macropus Major about thirty-eight days after impregnation —yet the times of "heat" have been recognised, and copulation witnessed, but only lately has any œstrual discharge been remarked. It must be remembered that in these creatures one orifice serves for the exit of fæces, urine, and generative products (in Marsupialia "there is even a common sphincter for the anus and urogenital orifice," Gegenbaur, p. 622), and that this, when closed, conceals in the cloaca the several corresponding apertures opening thereinto. Probably, therefore, whatever exudation attends the epochs of sexual excitement, if any there be, is hidden in the cloaca, unless, indeed, it should chance to be abundant, and that is not anticipated; neither, likewise, is it to be expected that a flux would partake of a distinctly sanguineous character, unless in so feeble and insignificant a degree as to be scarcely recognisable.

The most one appears warranted in expecting in these and allied lowly mammalia, is a mucous flux, perhaps feebly stained, with some increased odorousness, which, as in the higher mammals, is highly attractive and exciting to the males.

I have gratefully to acknowledge my indebtedness for information respecting the kangaroos at the Zoological Gardens to Mr. Bartlett, the able superintendent, who informs me that the Society's kangaroos display sexual excitement in September (which, he believes, corresponds in the southern hemisphere to our spring-time), and also in our spring month of April, the returning warmth of the season apparently stimulating them.

Until recently, neither Mr. Bartlett nor the keeper of the kangaroos had remarked any exudation or discharge from the cloacal orifice of the females at the time of "heat"; but, since attention has been directed to this point at my request, the keeper informs me that he has observed a "mattery slimy" discharge, slightly tinged with a reddish colour, at these times. He also informed me that, lately, prolonged copulation in a young female kangaroo, which had never bred, caused hæmorrhage, necessitating separation from the male. When impregnation has occurred, a close watch has been kept upon the females, in the hope of discovering the mode of transference of the embryo from the generative passages to the marsupium, but, hitherto, unsuccessfully. Mr. Bartlett tells me that something resembling blood and mucus has been seen to be conveyed by the female in her fore-paws from the cloacs to the marsupium, in which it was supposed the embryo might be entangled; and the keeper says that they sometimes find "hollow fleshy things" in the pens (fœtal envelopes); but I understand that no conclusive observations have yet been made. The issue of blood in question, small though it be, at what in these creatures is equivalent to the parturient act, suggests obvious analogies.

Above these grades, whose sexual systems and mode of reproduction are peculiar (*aplacentalia*), we come to a multitude of mammals of various kinds (*placentalia*), concerning some of which observation has taught us many interesting facts, though these are still too few to satisfy legitimate desire for information.

In all creatures there are periods of "heat" or sexual excitement, when both males and females are apt for procreation. These periods are marked by systematic excitement, and by local phenomena of a more or less conspicuous character. Among the mammalia, the times of heat display a seasonal periodicity; that is to say, they recur annually, biennially, quarterly, or at more frequent intervals, according as the conditions of existence or environments are favourable, or the reverse, and, apparently in some degree, according to the size of the creature, being, for example, rare in the elephant. Yet in every creature seasonal periodicity, at longer or shorter intervals, is observed, and, as Darwin and Laycock have shown, this periodicity always

partakes of an hebdomadal character. It is always some greater or lesser multiple of a weekly period.

In the lower animals in a wild or feral state, the aptitude for procreation is seasonal, recurring mostly at times when food and warmth are plentiful. Under normal circumstances, the earliest longing for sexual congress is promptly gratified; in the female, conception ensues, gestation proceeds on its appointed course, and until the genesial cycle has been completed by parturition, the "rut" or "heat," with its attendant desire for copulation, does not ordinarily occur. But, impregnation failing from any cause (*e.g.*, absence of the male at the appropriate season of sexual appetite), we may inquire, Do the symptoms of heat persist indefinitely? and, if not, What period elapses before they are again exhibited? Observation of wild animals, both in a state of nature and during captivity (when the latter does not interfere with reproduction), and, still better, of domesticated animals, shows that, after a definite period of quiescence, œstruation, or the "rut," invariably recurs at epochs which strictly conform to some multiple of weeks. In highly-bred and well-cared-for domesticated animals, œstruation would probably be renewed periodically, until arrested by conception; for it is well known that domestication enormously enhances the capacity for reproduction, and renders that sustained which, under other conditions of environment, subsides until it is renewed by the seasonal awakening. It is probable that, in the wild state, in the absence of the male, the "heat" or stimulus to sexual desire would, after a few periodical manifestations, die away, grow cold, and subside; remaining in abeyance until the return of the season with which it is primitively allied. This long rhythmed periodicity may be termed "seasonal," since it appears to be primarily allied with or dependent upon seasonal changes, as has been abundantly demonstrated by Darwin, Herbert Spencer, Laycock, and others. This seasonal periodicity of "heat" accounts for a corresponding periodicity in delivery, for, as is well known, many wild females bring forth their young at mild and favourable seasons, as spring, and not at inclement or unfructuous times. This is generally so in our domesticated animals when art does not interfere with their natural instincts; and, in truth, this primitive seasonal condition of the exercise of the generative function underlies the process of reproduction, even in the highest creatures. A trace of this seasonal influence is certainly still conspicuous in the greater tendency manifested by the human female to conceive at certain annual epochs; and it seems probable that this seasonal influence underlies the genesial function in all creatures, and is a relic and trace of a primitive or primordial condition governing reproduction.

We shall see that not only does woman most frequently begin her menstrual life in the summer months, but she brings forth her offspring more frequently in the spring than in other seasons, just as the lower animals do. Many years ago, I concluded that every woman had a law peculiar to herself, which governed the times of her bringing forth (and conceiving); that, in truth, she was more prone to bring forth at certain epochs than at others; and subsequent researches have not only abundantly confirmed this surmise, but established the accuracy of the forecast. The evidence is given in other lectures.

The influence of civilisation and domestication in expanding the reproductive powers is conspicuous. And yet the generative system, as Mr. Darwin has ably and conclusively shown, is highly sensitive to changes in the environment of the individual. Seemingly, the higher mental endowment of advanced human beings carries with it not only an augmented capacity for the reproduction of their own species, but also bestows a like advantage upon the creatures showing amenability to man's sway by flourishing under his dominion. Not alone does the human race increase, but man's flocks and

XUM

herds multiply prodigiously. Would that proportional care were observed in the breeding and propagation of the human species, as, *e.g.*, is taken in that of animals of merely commercial value!

(*To be continued.*)

RECENT RESEARCHES INTO THE PATHOLOGY OF GLANDERS.

In a *mémoire* read at the Paris Academy of Medicine in December last, and which was the joint production of MM. Bouchard, Capitan, and Charrin, the results are given of some researches, continued from November, 1881, into the nature of Glanders. After pointing out that Christot and Kiener were the first, in 1868, to discover the microbes in glanderous products, the authors of the memoir state that they have recognized the presence of these, not only in the parts exposed to the air—such as the nasal ulcers and pulmonary abscesses—but also in non-exposed parts, such as lymphatic glands, spleen and liver. The constant presence of these organisms, everywhere and at all times exhibiting the same characters, was a presumption in favour of the part they played in the pathogenesis of the disease.

In order to demonstrate that they really played this part, it was necessary to reproduce Glanders in an animal, especially an ass, by inoculating it with these microbes only, developed independently of a diseased horse, and absolutely free from anything else that might be derived from the latter. To effect this, the microbes had to be submitted to successive cultivators; and they were successful in doing so from glanderous products derived from man, horse, and guinea-pig, in neutralised solution of extract of flesh, kept in a bath at a temperature of 37° Cent. By means of successive sowings or inoculations of the culture fluid, the microbe was cultivated in a state of purity for eight generations. Multiplication did not take place in tubes whose contents were kept from contact with the air; and preliminary experiments showed that the first and second cultivations possessed the virulent properties of glander pus.

In July, 1882, a glandered horse was killed in the presence of the authors, and on the spot tubes containing culture fluid were inoculated with a fragment of a nasal ulcer; while other tubes received each a small morsel of a glander nodule from the spleen. On the following day there was removed to tubes (which were immediately sealed) a portion of these primary cultivations, which were inoculated in two asses on July 10th, 1882. On July 19th, nine days after inoculation, the ass which had received the first cultivation from the nasal ulcer died, and its body offered well-marked glander lesions in the lungs and genital organs. On July 28th, eighteen days after inoculation, the ass which had received the first cultivation from the spleen nodule also succumbed. No glander nodules were found in the lungs; ulcerative lesions were discovered in the upper part of the respiratory and digestive tracts.

Already on November 3rd, 1881, cultivations were made from the pus of an abscess opened in a man affected with Farcy, particulars of which have been already published (Thesis of M. Clement, Paris, 1881). A second cultivation of this pus was inoculated into three guinea-pigs, producing a disease from which two of them died—one in twenty, the other in twenty-four, days—with pulmonary and glandular glander lesions. The third guinea-pig was killed and it presented the same lesions. One of its lymphatic glands was employed to inoculate an ass with, and this animal appeared to

resist infection; but when killed three months afterwards, there were found the pulmonary lesions of Chronic Glanders.

These facts were not considered conclusive, as only the first and second cultivations were employed, and because the virulent matter, placed in the first fluid, might be diluted in the first, and even in the second cultivation; so that particles directly derived from the glandered subjects might have been inoculated, and not the organisms developed in the culture fluid. It was surmised that even a fourth cultivation should be considered suspicious in this respect.

The inoculations were therefore recommenced with the fifth cultivations, and a large number were made, all of which were equally demonstrative. The following is a series of these.

On August 11th, 1882, with a fifth cultivation, derived originally from the nasal ulcer of a glandered horse killed on July 4th, a large cat was inoculated; this died on September 5th—twenty-five days after inoculation. It showed a suppurating tumour of the left testicle and the inguinal glands of the same side. The morbid lardaceous and purulent tissue, when examined microscopically, showed the characters of inflammatory tissue with interstitial suppuration.

On September 5th, when the autopsy was made, another cat was inoculated with a fragment of lymphatic gland from this dead one, and death took place on September 21st—sixteen days after inoculation. There was a chancre at the point of inoculation, swollen inguinal glands, and miliary abscesses in the lungs.

On September 21st, at the autopsy of this cat, a small portion of its lymphatic glands was inoculated into a small cat. This died on September 28th—seven days after inoculation—and, on examination, a chancre was found at the seat of inoculation, with nasal ulcerations and perforation of the nasal *septum*, and sub-periosteal abscess of the nasal bones, pulmonary abscesses and tumefied lymphatic glands.

On September 27th, while this cat was yet alive, a guinea-pig was inoculated with a few drops of sanguinolent serosity from the nasal swelling. This creature died on October 28th—thirty-one days after inoculation. There was also a chancre at the point of inoculation in this case, inflamed lymphatic glands on the same side, and pulmonary abscesses surrounded by a hæmorrhagic zone.

On November 1st the pus from one of the pulmonary abscesses of this guinea-pig was inoculated into an ass, which died on November 11th—ten days after inoculation; the lungs were studded with acute glander-nodules.

In terminating their observations, the authors remark that the glanderous malady produced in the guinea-pigs by the inoculation of these cultivations, is absolutely the same, in a clinical and anatomical point of view, as the Glanders produced in the same species of animals by morbid products derived directly from glandered horses. The conclusions deduced from the preceding experiments are confirmed by others, which are not alluded to in detail, and which were made on sixty-one animals. It is asserted that Glanders is the second virulent disease attacking mankind, the parasitic nature of which is demonstrated, the other disease being Anthrax.

In the last number of the *Deutsche Medizin Wochenschrift* for 1882, Dr. Schütz, professor at the Berlin Veterinary School, and Dr. Loffler, assistant to Professor Koch, published the first results of the researches which they had made in common, at the Hygienic Institute of Berlin, on the best disinfecting agent to employ against Glanders, and particularly into the nature of that disease.

They at first examined, microscopically, stained sections of various specific lesions, as nodules from the lungs, liver, and spleen, and chancres or nodules

from the pituitary membrane. These sections, stained by a concentrated aqueous solution of methylene blue, washed in diluted acetic acid, dehydrated in absolute alcohol, and rendered transparent by cedar oil, showed here and there, in the midst of the tubercular elements, very fine bacilli, much resembling in form and dimensions the *Bacillus* of Tuberculosis discovered by Koch. These *Bacilli*, stained an intense blue, were the only microbes met with in these glander products. Having discovered this *Bacillus*, the professors had recourse to cultivation, and the culture fluid selected was serum of horses' blood—that animal being most frequently attacked by Glanders.

On September 14th, 1882, tubes filled with sterilised serum were inoculated by means of tuberculous granules, collected with due care from the lungs and spleen of a horse destroyed as glandered, and proved to be so at the autopsy. On the third day, the surface of the culture fluid presented minute flakes in the majority of the tubes. These flakes were composed, as subsequent microscopical examination after staining demonstrated, of an enormous quantity of Bacilli, in every respect the same as those observed in the specific nodules.

In order to prove that these Bacilli were really the cause of Glanders, it was necessary to inoculate animals susceptible of the disease, with the culture fluid so obtained. This was done, though only with the fluid of the fourth cultivation, in order to get rid of the objection that the inoculated fluid might contain traces of the original virus.

On October 14th, an old horse, apparently healthy, was inoculated with the fourth cultivation, in the mucous membrane of the nose and on both shoulders. On the third day there was fever; deep ulcers formed at the points of inoculation, and these were connected with the submaxillary and axillary lymphatic glands by nodular cords; so that after the eighth day the horse presented the classical tableau of inoculated Farcy. In about a month the ulcers commenced to cicatrize; the glands diminished in volume, and the animal became vigorous and lively. It was killed on November 25th, and the autopsy demonstrated:—1. On the pituitary membrane, nasal septum, and turbinated bones, there were numerous radiating, fibrous cicatrices. 2. In the lungs old hard nodules, fibrous and calcified, as well as a large number of fresh grey nodules, surrounded by a reddish zone. 3. The bronchial glands were hard and fibrous, caseous in the centre, and as large as an apple. The animal was, therefore, glandered when inoculated, and the recent lesions in the lungs could not be attributed to the inoculation with certainty. The experiment, therefore, was not satisfactory. A microscopical examination of the lesions found at the autopsy showed, in sections prepared as above stated, the presence of the same *Bacillus*, and inoculation of culture fluids gave the same results.

In the two other glandered horses identical results were noted, both in the presence of the Bacilli, and their cultivation in sterilised fluids.

Inoculation experiments with the culture fluid were made on other animal species beside the horse—as the rabbit, guinea-pig, and mouse. The results varied with the species. In the rabbit, sometimes Glanders developed with terrible intensity, rapidly invading all the viscera; sometimes it followed a chronic course, and was only manifested by local ulcerations and engorgement of vessels and lymphatic glands.

All the inoculations practised on *white* mice were ineffective, while, on the contrary, those made on *grey* or brown mice were in eight or ten days successful, glanderous nodules being developed, in which the characteristic Bacilli were readily found.

But it was the guinea-pig which yielded the most remarkable results. In three or four days, and in all cases, the inoculation wound became a deep

ulcer with indurated and excavated borders, and the neighbouring lymphatic glands enlarged to the size of a nut; then, more or less rapidly, according to the quantity of fluid injected, there were manifested the indications of generalised disease, farcinous engorgements and ulcerations of lymphatic vessels, nodification of the testicles, mammæ, vulva, and ovaries, chancres on the pituitary membrane or trachea, and glanderous infiltration of all the viscera.

In all these lesions could be found, after staining, the specific *Bacilli;* any doubt in this respect was soon removed by cultivation of the morbid products.

Notwithstanding the concordance of all these facts, a decisive proof was yet required of the inoculability of the cultivated microbe in the horse. So, on November 28th, 1882, two healthy horses, aged respectively twenty and two years, were inoculated; the first with fluid representing the *eighth* generation of virus obtained on September 14th, on both sides of the neck, the chest, and prepuce; while the young horse was inoculated in the same regions, as well as on the nose, with fluid of the fifth cultivation from a nodule obtained from the testicle of a guinea-pig which died on November 8th, from the effects of inoculation with fourth cultivation of original virus. Both horses were inoculated by means of a Pravaz syringe, which deposited the virulent fluid in the subcutaneous connective tissue.

In a few days, there appeared at the seat of inoculation, hot, œdematous, diffused and painful swellings, the appetite disappeared, the hair stood erect, and the limbs became stiff. At the end of a week, nodulated cords united the lymphatic glands, and the swellings which ulcerated discharged a turbid yellowish-green pus. On the twelfth day, the young horse showed on its face a rounded chancre with excavated margin, and so deep as to expose the bone. At the same time, both animals had a discharge from the nostrils, and which formed greyish adherent crust around them, and the pituitary membrane was covered with small chancres with salient margins. Gradually the symptoms became more aggravated, and the old horse died on December 12th.

A *post-mortem* examination showed cutaneous chancres around the inoculated points; nodular cords here and there ulcerated, connecting the chancres with the neighbouring lymphatic glands, which had acquired the volume of a hen's egg, and which, on section, offered a great number of yellow or grey nodules disseminated in a reddish-brown tissue infiltrated with serum. The pituitary ulcers extended through the mucous membrane, and had yellowish-white granulations at the bottom; a similar chancre was found on the epiglottis; the lungs were full of nodules, the size of a grain of millet-seed, formed of a semi-transparent greyish nucleus with a reddish areola. All these lesions could only be attributed to acute Glanders.

The following day, December 13th, the young horse, which was very debilitated, was killed. The autopsy gave the following:—Considerable cutaneous lesions in the form of ulcerations, inflamed lymphatic vessels and tumefied lymphatic glands as in the last case; abundant infiltration of the subcutaneous connective tissues; abscesses of the mastoido-humeralis, pectoral, abdominal, fascia-lata, and semi-membranosus muscles; the pituitary membrane covered with ulcers, nodules, and fungous granulations; the turbinated bones destroyed at their upper part by these lesions; the lungs studded with grey, semi-transparent, miliary nodules surrounded by an areola; voluminous, soft, bronchial glands, infiltrated with caseous nodules; the spleen, liver, and kidneys hyperæmic and infiltrated, with turbid tumefaction of their elements.

In the opinion of the authors, these results absolutely confirm the opinion they acquired, as to the part played in the genesis of Glanders by the *Bacilli* observed in the substance of the glander nodules.

DIAGNOSTIC PROOF IN CASES OF SUSPECTED GLANDERS.*

THE above forms the title of a pamphlet by Professor Rudolf Molkentin, of the Russian Veterinary School at Dorpat, which has just come to hand. His object in undertaking the experiments detailed therein was to gather further information respecting the susceptibility of certain of the less valuable and smaller domesticated animals to the action of the Glanders contagium. It need scarcely be said that, provided we could readily infect, by inoculation, such animals as rabbits, guinea-pigs, dogs, or cats, we should be in possession of a power which would enable us to decide those doubtful cases which are by no means rare in practice.

In the opening chapter, Molkentin furnishes us with a tolerably exhaustive *résumé* of the work which has hitherto been done in the same direction. The various views which have been entertained as to the nature and transmissibility of this malady, from the days of Vegetius up to the present time, are recapitulated. The discovery, last year, of a Glanders bacillus, by Drs. Loffler and Schutz, is referred to, and whilst acknowledging the value and interest attached to this discovery, Professor Molkentin very properly points out certain circumstances which preclude busy practitioners from availing themselves of this aid to diagnosis. The reagents and colouring fluids required to stain the bacillus, the necessary manipulation, and the high powers requisite to identify it, are not always at the disposal of the general veterinary practitioner.

As a matter of fact, the method of inoculation is also impracticable as regards the profession in this country, owing to the stringent and vexatious nature of the rules laid down for the regulation of vivisection. Notwithstanding this fact, I cannot but think that the knowledge of what we might do, if permitted, will prove interesting.

As far back as 1821, we find Schilling successfully inoculating rabbits with glanderous matter; and since that date numerous other experimenters, notably Renault, Bouley, Gerlach, Leisering, Hertwig, Bollinger, Semmer, and recently Galtier, have turned their attention to the subject. Their results and conclusions, however, it must be confessed, are very contradictory, and therefore unsatisfactory; so that there was plenty of room for further experiments. Molkentin's experiments are, therefore, exceedingly welcome, especially as they bear out in many respects those of Galtier, performed in 1880-81.

Galtier† recommended the inoculation of rabbits with material derived from suspected animals, but confessed that many rabbits proved immune, and that the symptoms produced often resembled more those of purulent infection than Glanders. On this account, then, the inoculation of rabbits is not perfectly reliable.

The same observer‡ found, however, that dogs were more susceptible than rabbits, none of his numerous inoculations proving unsuccessful. The lesions, however, remained localized, and took the form of small ulcerating wounds, resembling Farcy ulcers, which eventually, however, healed and cicatricised. In some cases secondary ulcers made their appearance on the legs and along the back.

It is unnecessary for me to give the details of all Molkentin's experiments which were carried out on rabbits and dogs. The following particulars will, I think, suffice :—

Experiments with Rabbits.—Twenty-two rabbits were inoculated in various

* Communicated by W. F. Garside, M.R.C.V.S., Professor of Veterinary Science at the Royal Agricultural College. Cirencester.

† Rec. de Méd. Vét., No. 21, 1880.

‡ Archives Vét. d'Alfort, 1881.

ways by subcutaneous injection, by scarification, by removal of the epidermis, and by injection of the diluted nasal discharge of glandered horses into the nostrils. The results were in five cases positive, in seven negative, and in ten doubtful.

Experiments with Dogs.—Eight animals were experimented upon, inoculation being performed by injecting beneath the flank the diluted nasal discharge of a glandered horse, and by applying it to incisions made in the skin of both ears. In one or two cases, fluid taken from the swellings which appeared at the seat of inoculation in the successfully infected rabbits, was used. Five out of the eight dogs died, death resulting in twenty-eight, nineteen, five, six, and eight days respectively. The remaining three animals, however, became affected with Glanders, but the morbid lesions remained localized.

Molkentin sums up as follows :—Many rabbits possess immunity against the Glanders contagium, but are, on the other hand, extremely susceptible to the subcutaneous injection of purulent matter, perishing from pyæmia, septicæmia, and phlegmon. The symptoms resulting from the introduction into the system of glanderous discharges are often very similar to those seen in the above-mentioned diseases. In some few cases ulceration of the skin and nasal discharge certainly do occur, but it is very rare to find any alterations in the mucous membranes or internal organs. With such variable results, it is consequently impossible to rely upon the inoculation of rabbits as a test in cases of suspected Glanders in horses.

The inoculations practised on dogs were in every case successful, the operation being followed in several cases by the formation in the skin of small ulcerations with speckled bases, secreting an ichorous discharge. Emaciation rapidly occurred, and death resulted from metastasis to the internal organs, and consequent general Glanders. In the cases which recovered there was the same formation of ulcers, which, however, subsequently healed.

Young dogs are the most suitable subjects, and the results following inoculation are perfectly reliable, and therefore capable of affording valuable testimony as to the correctness of the diagnosis in cases of suspected Glanders.

The operation is best performed by subcutaneous injection, and the application of the infected discharge to the surface of a superficial wound.

INTERNATIONAL VETERINARY CONGRESS.

THIS congress will hold its first meeting on September 10th at the Hotel-de-Ville, Cureghem, Brussels, under the patronage of Leopold, King of the Belgians. The Minister of the Interior will preside at the meeting. The Organising Committee appear to have been very successful in their efforts so far, and one of the advantages they have been able to secure is a reduction of fifty per cent. in the railway fares of those who attend the Congress.

The number of Belgian subscribers is 163; foreign subscribers, 37; and honorary members, 7. The Belgian Minister for Foreign Affairs, in notifying to other Governments the holding of the proposed Congress, expresses a hope that they will send official representatives.

BRITISH VETERINARY ASSOCIATION.

WE would beg to remind the profession that the first meeting of this Association will be held on May 8th, the day after the annual meeting of the Royal College of Veterinary Surgeons. The meeting promises to be a great success, and the Organising Committee has been extremely fortunate in securing the beautiful and commodious lecture-room of the Society of Arts, John Street, Adelphi—one of the finest in London—for the transaction of its business.

A LICENSING VETERINARY COLLEGE FOR IRELAND.

THE attempt to establish a licensing Veterinary School in Dublin has not yet been abandoned, and, as will be seen from the following notice and correspondence, it is now proposed to establish the school in connection with the Medical Faculty of the Catholic University of Ireland, the question of endowment being left for future consideration. To the establishment of a Veterinary School—or a dozen of them—in Ireland there can be no objection, but the granting of diplomas would be fatal to the welfare of veterinary medicine and the interests of the public, not only in Ireland, but in Great Britain, and will be opposed by the entire body of the profession. The school, it will be noticed, is to be sectarian.

The following resolutions were passed at a meeting of the Medical Faculty of the Catholic University of Ireland, in the School of Medicine, Cecilia Street, Dublin, March 8th, Dr. Coppinger in the chair :—

Moved by Dr. LYONS, M.P., seconded by Dr. QUINLAN—

"That the standing orders be suspended in order that the following motion in reference to the proposed establishment by charter of an independent Irish Veterinary College may be considered, having regard to its importance in the present crisis from an outbreak of serious bovine disease."

Moved by Mr. HAYES, seconded by Professor CAMPBELL—

"That this faculty hails with satisfaction the prospect of the establishment of an independent Irish Veterinary College to meet a long-recognised want in the educational system of Ireland; that it has pleasure in placing the resources of its school of medicine at the service of the proposed college; and that its professors will gladly receive into their classes all intending veterinary students, and will readily take their part in conducting the examination for the diplomas until further provision be made for the new college."

Dr. LYONS, M.P., sends the following to the *Irish Sportsman* :—

"SIR,—I enclose you copy of letter which I have had the honour to address to Lord Spencer. His Excellency has been good enough to devote much time to the consideration of this very important subject, which, as your readers are aware, was brought fully in all its bearings under the notice of Earl Cowper by a very influential deputation of members of Parliament and other persons of distinction. It is unnecessary to go into the details of a question on which there is a consensus of opinion amongst all educational authorities in Ireland, and which deals with a subject of such vast financial importance to the country.

"Its public utility is again illustrated in a most pointed manner by the invasion of bovine and other maladies which strike at one of the most important interests in Ireland. The question of endowment is, no doubt, of great difficulty, but I believe I have succeeded in forming a plan for the working of the college without waiting for State help, which is only a question of time.

"It is of primary urgency to supply the want of veterinary education in

Ireland, and I trust all interested will do me the honour to support the proposal I have now made. United action will command success.—Faithfully yours, "ROBERT D. LYONS.

"Merrion Square, *March 7th*, 1883."

"Merrion Square, Dublin, *March 7th*, 1883.

"DEAR LORD SPENCER,—I fear that a letter of mine, sent with some newspapers to the Castle in the autumn, failed to reach your Excellency's hands, as I believe you left Dublin on that day.

"I then submitted to your Excellency the proposal to incorporate by charter a body of lay and professional gentlemen as a president and council of a Veterinary College, with powers to examine and grant diplomas, hold property, and do all necessary acts, leaving to the future the question of endowment.

"With the plan I proposed for utilizing the promised aid of some of the existing schools of medicine and hospitals, the basis of a high order of knowledge could be secured without expense to the State, while in the cliniques of the eminent veterinary surgeons of this city the special knowledge of the diseases of horses and other animals could be obtained. It is thus feasible to start the college without any demand on the State, except for a charter. Once under way, I have no doubt whatever that its claims to public and Parliamentary recognition will only be a question of time.

"Trusting your Excellency will see your way to this practical step being taken in time to allow the many intending veterinary students who have waited so long and so anxiously for the initiation of the Irish Veterinary College to avail themselves of the approaching summer session in the medical schools, I have the honour to be, my dear Lord Spencer, your Excellency's faithful servant, "R. D. LYONS.

"His Excellency the Earl Spencer."

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

A special general meeting of the above society was held at the Grosvenor Hotel, Manchester, on the 21st February, the President, Peter Taylor, Esq., in the chair.

There were also present Messrs. R. S. Reynolds, Thos. Greaves, Wm. Whittle, Wm. Woods, Thos. Taylor, Geo. Fleming, W. A. Taylor, Wm. Broughton, T. Hopkins, S. Locke, A. Santy, Capt. Russell, T. Briggs, W. Leather, C. W. Elam, E. H. Leach, E. Falkner, J. B. Wolstenholme, and the Hon. Sec.

The minutes of the last general meeting, as well as the minutes of the various Council meetings were read and confirmed.

The President then stated the object for which the meeting had been summoned, and called on the Treasurer for his financial statement, which was read and approved. Leave was given to the Treasurer to invest, in the names of the Trustees, a further sum of £600 in the Mersey Dock Bonds, thus raising the invested capital to £1900.

The President, in moving the alteration of Rule 2, said, "I have considered it my duty to call a general meeting to take into consideration the wording of Rule 2: 'That any Veterinary Medical Association making a grant of £20 or upwards to the funds shall be entitled to elect one of their members a Life Governor for each £20 voted to the funds.'

XUM

"Now the Midland Veterinary Medical Association having lost their representative—the late Mr. Carless, of Stafford, whose death we all deplore—claim a right to elect another in his place. My colleagues in office differed with me as to the reading of this rule, and my friend, Mr. Greaves, submitted it to his solicitor, who also gave judgment against me.

"Having received an invitation to attend a meeting of the Midland Society at Birmingham in January last, at which the consideration of this rule was part of the business, I attended, when we had a most interesting discussion on the point. I told them that to myself this rule seemed an anomaly, and that a special general meeting should be called to consider the advisability of altering it. The anomaly is this—that a donor of £10 can become a Life Governor; therefore, a society could purchase for £20 two Life Governorships, but for a gift of £20 they are debarred, by the reading of my colleagues, from electing another in the place of the one deceased.

"To settle this dispute, I propose altering Rule 2, by adding the following after the words 'for each £20 voted to the funds,' 'and in the event of the decease of such Life Governor, the society he represented may elect another Life Governor in his place without additional payment.' This alteration to be retrospective. This alteration of the rule I now propose, with a sincere wish that the same may be for the best interests of the Society.

"As you have heard by the minutes of our Council meetings, we have defended settled, and arranged many unpleasant cases, to the honour and advantage of our professional brethren. Our finances through this have been drawn upon, both for defence and benevolent purposes. Yet after payment of these, I am proud to say that we show a glorious balance of upwards of £2000.

"This meeting will not be called upon to elect office-bearers, as the present officers have, according to our rules, yet two years to serve. I am pleased to see such a good meeting, and most heartily thank you for your kind attendance, and at the same time assure you that the most ardent wish of all your officers is that success and honour shall mark our progress."

The motion, having been seconded by Mr. Wood, was after considerable discussion carried unanimously.

After a vote of thanks to the President, the meeting terminated.

GEORGE MORGAN, *Hon. Sec.*

THE BENEVOLENT AND DEFENCE FUNDS.

LIST OF SUBSCRIPTIONS TO BENEVOLENT AND DEFENCE FUNDS, FROM 9TH MARCH, 1882, TO 9TH MARCH, 1883.

1882.		£	s.	d.
March	15. A. L. Gibbons	1	1	0
„	17. G. Ball and Son	2	2	0
„	21. T. Proctor ...	1	1	0
„	23. P. M. Walker	0	10	6
„	23. C. Muir, Cardiff	1	1	0
„	26. T. Pratt, Ripon	1	1	0
„	29. Hugh Ferguson	1	1	0
„	29. T. Hopkins ...	1	1	0
„	31. F. W. Barling	0	10	6
April	27. J. Woodger, jun.	1	1	0
May	31. E. Stanley ...	1	1	0
June	10. M. Trigger ...	0	10	6
Oct.	30. W. G. Schofield	0	10	6
Nov.	11. J. Briggs ...	1	1	0

1883.		£	s.	d.
January	3. W. Bower ...	1	1	0
„	3. J. C. James ...	0	10	6
„	3. James Rowe ...	1	1	0
„	3. R. Reynolds ...	1	1	0
„	3. J. J. and J. Freeman ...	1	11	6
„	3. R. Cox	1	1	0
„	3. H. Batt and Son	2	2	0
„	3. J. Markham ...	0	10	6
„	3. W. Carless ...	1	1	0
„	3. G. Cave	0	10	6
„	3. F. G. Samson	1	1	0
„	3. F. T. Stanley...	1	1	0
„	3. J. H. Goodall...	1	1	0

		£	s.	d.
January	3. G. Newsome ...	0	10	6
„	4. J. D. Overed ...	0	10	6
„	4. M. J. Roberts...	1	1	0
„	4. E. P. Rothwell	1	1	0
„	4. H. J. Cartwright and Son ...	2	2	0
„	4. R. Roberts ...	1	1	0
„	9. G. Banham ...	1	1	0
„	9. A. L. Gibson ...	1	1	0
„	9. S. H. Withers	1	1	0
„	9. Jas. Bale, Otley	0	10	6
„	9. E. Nuttall ...	0	10	6
„	9. A. G. Thornley	1	1	0
„	9. T. Collins ...	0	10	6
„	9. A. H. Santy ...	1	1	0
„	9. Mr. Gregory ...	0	10	6
„	9. T. Blakeway ...	1	1	0
„	11. G. Morgan ...	1	1	0
„	12. R. C. Edwards	0	10	6
„	12. W. Cawthorn ..	0	10	6
„	12. C. Crowhurst...	0	10	6
„	12. J. W. Axe ...	1	1	0
„	15. W. F. Peacock	1	1	0
„	16. Sir F. Fitzwygram	1	0	0
„	19. T. G. Chesterman	1	1	0
„	19. C. Moir	0	10	6
„	23. Storrar and Son	1	1	0
„	23. W. Woods ...	0	10	6
„	23. J. Carter... ...	0	10	6
„	23. W. Whittle ...	0	10	6
„	24. T. D. Broad ...	1	1	0
„	24. H. Hogben ...	0	10	6
„	24. T. Augers ...	1	1	0
„	25. Thos. Walley...	0	10	6
„	25. T. A. Dollar ...	1	1	0
„	28. J. Woodger ...	1	1	0
„	28. F. Danby ...	0	10	6
Jan.	28. E. Price	5	5	0
„	28. H. R. Perrins	1	1	0
„	28. J. Russell ...	0	10	6
„	28. R. Triggars ...	1	1	0
„	28. Mr. Meek ...	1	1	0
„	28. Mr. Hill	1	1	0
„	28. H. Olver ...	0	10	6
„	28. Mr. Over ...	0	10	6
„	28. Mr. Beddard...	1	1	0
„	30. F. W. Wragg...	1	1	0
„	30. H. Bland ...	1	1	0
„	30. A. Rushall ...	1	1	0
Febry.	8. B. Wolstenholme	1	1	0
„	8. T. Aubury ...	0	10	6
„	13. W. Elam ...	1	1	0
„	13. J. Ferguson ...	0	10	6
„	14. J. M. Axe ...	0	10	6
„	14. Wm. Broughton	0	10	6
„	14. P. M. Walker	0	10	6
„	14. P. Walker ...	0	10	6
„	14. P. Deighton ...	0	10	6
„	14. J. E. Scrivens	0	10	6
„	14. Mr. Pyatt... ...	1	1	0
„	14. Thos. Secker	0	10	6
„	20. Edwin Faulkner	1	1	0
„	20. Thos. Greaves	1	1	0
„	21. P. Taylor... ...	1	1	0
„	21. W. A. Taylor	1	1	0
„	21. Tom Taylor ...	1	1	0
„	21. H. Ferguson ...	1	1	0
„	21. S. Leach ...	0	10	6
„	22. H. Thompson	1	1	0
March	5. J. B. Taylor ...	1	1	0
„	6. J. W. Anderton	0	10	6
„	6. G. Morgan ...	1	1	0
		£91	6	0

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

FINANCIAL STATEMENT FROM 9TH MARCH, 1882, TO 9TH MARCH, 1883.

The Veterinary Mutual Defence Fund.

CASH RECEIVED.	£	s.	d.
Balance in Bank 9th March, 1882 ..	425	18	11
Subscriptions from 9th March, 1882, to 9th March, 1883	89	15	0
Bank Interest June 24th, 1882 ..	4	16	5
„ December 23rd, 1882..	5	5	1
	£525	15	5

CASH PAID.	£	s.	d.
1882.			
May 22nd.—Cash to Mr. A. Olver, Rugby..	10	0	0
Aug. 26th.— „ to W. Wolstenholme	7	0	0
1883.			
Jany. 13th.—500 Application Forms ..	0	8	6
March 8th.—Cash Invested in Birkenhead Docks	400	0	0
March 9th.—Secretary's Expenses ..	4	13	7
„ 9th.—Treasurer's „ ..	0	10	6
„ 9th.—Cash in Bank	103	2	10
	£525	15	5

Amount of Subscriptions unpaid, £122 17s.

Audited and found correct,

March 9th, 1883. JOHN B. WOLSTENHOLME.

The National Veterinary Benevolent Fund.

Cash Received.	£	s.	d.
Invested in Birkenhead Docks ..	1,300	0	0
Second Amount Invested in Docks, March 8th, 1883	600	0	0
Balance in Bank, 9th March, 1882 ..	165	11	7
Subscriptions from Members from 9th March, 1882, to 9th March, 1883 ..	1	11	0
Bank Interest to June 24th, 1882 ..	1	19	5
,, to Dec. 23rd, 1882 ..	2	4	6
Mersey Dock Coupons, June 24th, 1882	25	9	2
Mersey Dock Coupons, Dec. 23rd, 1882	25	4	3
	£2,122	19	11

Cash Paid.	£	s.	d.
1882.			
March 23rd.—Cash to Widow Beal ..	2	0	0
Nov. 24th.— Cash to Brown's Orphans	5	0	0
1883.			
Feb. 14.—Cash to ,, ,,	10	0	0
March 8th.—Cash Invested in Birkenhead Docks	200	0	0
March 8th Dock Bonds	1,900	0	0
,, 9th Cash in Bank	5	19	11
	£2,122	19	11

Audited and found correct,

March 9th, 1883. JOHN B. WOLSTENHOLME.

Knott Mill, Manchester. THOMAS GREAVES, *Hon. Treasurer.*

Proceedings of Veterinary Medical Societies, &c

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE twenty-first annual meeting and dinner of this Association was held at the Grosvenor Hotel, Manchester, on Wednesday, February 21st.

The following forty members and friends were present, viz.:—The President, Mr. Wm. Woods, in the chair; Mr. George Fleming, President, Royal College of Veterinary Surgeons; Professor Williams; Messrs. R. S. Reynolds, Thos. Greaves, Peter Taylor, Wm. Whittle, Dr. Martin, W. A. Taylor, T. Taylor, J. W. T. Moore, W. Leather, C. W. Elam, S. Jackson, E. Kitchen, W. J. Welsby, S. Locke, T. Hopkin, A. Lawson, Jno. Lawson, C. W. Ingram, E. Faulkner, A. F. Appleton, Wm. Dacre, A. Munro, Jas. Lambert, E. H. Leach, Wm. Woods, Jun., A. M. Michaelis, Thos. Briggs, W. Packman, J. B. Polding, B. H. Russell, H. Ferguson, A. W. Briggs, A. H. Santy, T. B. Stone, Wm. Broughton, Wm. Bromley, and J. B. Wolstenholme.

The SECRETARY read the list of replies stating inability to attend, also the minutes of the last meeting, which were confirmed.

Mr. PETER TAYLOR then referred to the death of Mr. W. A. Cartwright, of Whitchurch, an honorary member of this Association, and paid a fitting tribute to the memory of one who so long and earnestly strove for the advancement of the profession of his choice. Mr. Taylor concluded his remarks by moving, "That a letter of condolence be sent to the relatives of the deceased gentleman." This was seconded by Mr. THOS. GREAVES, and supported by the President of the Royal College of Veterinary Surgeons, both of whom bore testimony to the ability and high aim of our late friend. The motion was carried unanimously.

The TREASURER then handed the President a letter he had received announcing the death of Mr. Thos. S. Faulkner, of Rochdale, also a member of this society, and moved that a letter of condolence be sent to his relatives. This was seconded by the SECRETARY, and carried unanimously.

Mr. S. LOCKE nominated for membership Mr. Ed. Kitchen, M.R.C.V.S., of Liverpool.

Mr. WM. LEATHER proposed, and Mr. C. W. ELAM seconded, "That Mr. Alexander Bain, M.R.C.V.S., of Liverpool, be a member of this Association." Carried unanimously.

The SECRETARY proposed, and the TREASURER seconded, "That Mr. Wm. Davidson, M.R.C.V.S., of Manchester, be a member of this Association." Carried unanimously.

Mr. WM. LEATHER moved that Rule II. be so amended as to read as follows: "That the meetings shall be convened by circular, giving each member four clear days' notice of each meeting, which shall be held on the second Wednesday in the months of March, June, September, and December, on premises that shall be fixed from time to time by the Association." Seconded by Mr. WM. WHITTLE, and carried unanimously.

Mr. WHITTLE then withdrew the motion of which he gave notice at last meeting.

The annual election of members of Council, Royal College of Veterinary Surgeons, was then brought forward, and Mr. THOS. GREAVES, after alluding to the very regular attendance and sound policy of Mr. William Whittle, who represents this Association, and retires by rotation in May next, proposed that Mr. Whittle be the candidate to represent this Association. Mr. PETER TAYLOR seconded the motion, and it was carried unanimously.

Mr. WHITTLE then thanked the Association for again honouring him in their selection.

The PRESIDENT then read the following inaugural address:—

Gentlemen,—I must thank you all for the position in which I find myself to-day, a position the honour of which is at any time one to be coveted, but at the present, the twenty-first anniversary of the Society's existence, one of the highest honours a society could bestow upon any one of its members.

I am pleased, and I congratulate the Society upon the fact, that those gentlemen who were its earliest promoters and who founded the Society are still amongst its most earnest workers and devoted adherents, thus showing that they are not ashamed of their offspring. Some there were who nursed it as a child, and who have now passed away, whom the Society remembers with the liveliest feelings of gratitude and good-will, and who well deserve a good name from the whole profession for this act alone, even if they had not another claim upon the profession's remembrance.

This was the first society of veterinary surgeons formed in England, and, as exemplifying the maxim "What Lancashire thinks to-day all England will think to-morrow," the whole of the United Kingdom has followed in its wake, and there are now societies in almost every part of her Majesty's dominions. It would take too long a time, and it is too well known to you all, to tell the good these societies accomplish. They bring together veterinary surgeons upon the broad basis of common fellowship; they are the best method of intercommunication and interchange of ideas; they are an incentive particularly to the younger members to keep up their scientific knowledge by reading; and from them, I might almost say from this, has sprung another kind of society, of equal importance, although in another branch—I mean the Benevolent and Defence Society, one to which every member of the veterinary profession ought to belong, which has done and which will still continue to do a large amount of good.

I congratulate the Society upon its present prosperity. I believe that it is not only the father of them all in age, but that it is, and I hope will long continue, the father of them all in strength. A further development of these societies is now awaiting your approval and support. The British National Veterinary Association, a natural sequence of the success attending the National Congress held last year, is in course of formation. I shall say little concerning it, because there is printed matter explaining its objects, except that it is not intended to supplant local Associations: this it can never do; but it is intended to hold meetings periodically, to unite the strength and ability of the whole profession, where prearranged subjects, both complex and

XUM

simple, relating not only to science, but to the general welfare of the profession, may be explained and discussed by those who have special ability in that direction. I believe that local societies have nothing to fear from it, that it will live or die entirely according to its merits, and that it deserves our cordial support.

Having spoken of some good the societies have done and are still doing, I would like to say a few words regarding one improvement which still lies open to us. We require to become a still greater political force, to extract from Government that which is due to us in the way of Government recognition. The Government are always very tardy at recognising the good qualities of any public body, and it is only by strong, united, and combined action such as these societies give that we can hope to obtain what we require. True, we have by the almost single exertions of Mr. Fleming obtained an Act which will in future years be of immense benefit; but I believe there is not another member of the profession who could have secured to us that Act with the little assistance that Mr. Fleming received. We are now threatened with a change in the number of Government veterinary surgeons in India, and that change not by way of a much-desired and very necessary increase, but by a reduction, which I think we ought to make it our duty collectively to endeavour to prevent.

We have recently made an alteration in the board of examiners, and I confess it was not without some feeling of trepidation that I saw the old and honoured names of the members of the sister profession swept from our examining board; but I think a careful study of the new examiners will show that in making that change we have not in any way jeopardized the welfare of the profession. There are, and always have been, those who will carp and criticise at every innovation, and it is necessary that it should be so; but what I wish to impress upon all is, that it rests with the profession collectively as to whether their board of examiners is a good one. Let the profession send the best members they have to represent them in the Council, and then, depend upon it, the examining board will be a strong one and a good one; and just as the composition of the examining board is in the hands of the veterinary profession, so the composition of the veterinary profession for the future is in the hands of the examining board. With them the future welfare of the profession largely rests, and I trust and feel that not a single examiner will enter upon his duties without a due sense of the responsibility with which he is entrusted. The profession, as a body, is rising in the public estimation more rapidly than its most zealous advocates of five-and-twenty years ago would ever have dared to hope. It is now recognised that there are among veterinary surgeons men of the highest scientific ability, and it remains for us and for the youth of our profession to watch that no retrograde step mar our progress.

A scientific discovery has been made by one of our number (Prof. Williams) in connection with that peculiar disease affecting sheep known as "Louping Ill," which, if found to be absolutely or nearly correct, will bring the veterinary profession to the fore in a most marked manner, and will radically change the opinions of scientific men as to the development of vegetable organisms within the human body. I heartily wish the discoverer every success, and trust that it will not be the last success he will have of a similar kind.

I would like now just to say a few words anent the recent spread of Foot-and-mouth Disease. I believe the cause of the disease becoming epizoötic, in my district at any rate, is due to the large importation of Irish pigs. I have not been able in all cases to trace the origin of the disease in those cattle coming under my observation, but I have in some cases traced it undoubtedly to recently imported Irish pigs, and I have stopped Irish pigs on the highway

suffering from the disease; and when, added to this, it is authoritatively announced from Dublin that the disease is fearfully prevalent, I think it behoves the authorities at once to take steps to prevent its further spread from this source, for though it is probably one of the least malignant of the contagious diseases amongst cattle with which we are familiar, it tells very heavily upon the dairymen and those who supply our towns with milk.

I would like, in conclusion, to say a few words concerning a society which has in one way and another been recently brought with more than usual prominence before our notice. The Royal Society for the Prevention of Cruelty to Animals is undoubtedly doing good work, if one will only consider the amount of pain cruelly inflicted upon the lower animals before it came into existence, and the greatly decreased amount since. It is highly necessary for the welfare of our profession that we should be considered by the general public as the protectors of the lower animals, that where pain in whatsoever form is unnecessarily inflicted we should boldly step forward and denounce it, even at the cost, as it may at the time appear, of some popularity. I think we should support with our whole strength the wellbeing of the Society, and I trust it may not be considered that I am in any way hostile to it, but rather the reverse, in making a criticism or two upon it, with a view to its improvement. The inspectors, as a rule, I believe to be conscientious and trustworthy men; but there is a sort of rivalry amongst them, that the inspector in a district shall have as many or more cases come before the court, and as many or more convictions, as his predecessor. This, I think, and I say it without any thought of personal reference, is apt to lead to a system of bringing before the magistrates minor cases which might very well be let alone, simply in order to increase the sum total of cases per annum. Now I think that if, instead of taking the number of convictions an officer obtains as evidence that he has been doing his duty, the Society would appoint in each locality a small committee, of which one or more veterinary surgeons should be members, to report periodically as to the manner in which the Society's officer performed his duty, it would be a plan better calculated to ensure protection to the lower animals, to the public, and to the officer himself, than what seems to be the present system. Of course, it may be said that any man stopped by an officer can bring his horse to a veterinary surgeon and get his opinion upon the case; but it must be remembered that a poor ignorant carter has often such a wholesome dread of the Society's officer that whatever he says is law. I know that in some places officers are deterred from obtaining in any but very serious cases a professional opinion, because the magistrates object to veterinary surgeons giving evidence, on the plea that it is very expensive for the delinquent to have to pay a professional fee in addition to a fine; but it cuts both ways—it is protective as well as expensive, and there are degrees of cruelty of which, in some cases, few Society's inspectors are capable of judging correctly. Moreover, it is not impossible to imagine that sometimes the anxiety to obtain a conviction may be such as to make an officer unintentionally overdraw his case. Hence I think that, in spite of even magisterial opposition, a veterinary surgeon's opinion ought in most cases to be obtained, even though it should not afterwards be necessary for that veterinary surgeon to appear in court.

Mr. GREAVES moved, "That the best thanks of this meeting be given our President for his admirable address." Seconded by Mr. WM. WHITTLE, and carried unanimously.

Mr. GREAVES then read the following report on the formation of the National Veterinary Association, of which he, along with Mr. Thos. Briggs, had been appointed to the provisional committee; viz. :—

XUM

The President has alluded to a very important subject, and I, being one of your appointed delegates to attend the preliminary meeting of the National Veterinary Medical Association, held in London in October last, have to report that I, along with my worthy colleague Mr. Briggs, attended. The meeting was composed of delegates from each of the Veterinary Medical Associations in England, Ireland, and Scotland, also the army and the colleges. It was unanimously resolved to establish a National Veterinary Medical Association, to hold its meetings once a year at various important centres, the first held the day after the annual meeting of the profession in London. The objects of the Association to be to promote and advance veterinary science, and maintain the honour and interests of the veterinary profession. I felt it was an object worthy of approval, and one that ought to be cordially supported by all who take an interest in the onward progress of our profession. It will tend to stir up emulation amongst our best members ; it will quicken the life in the profession ; it is unquestionably a step in the right direction. I remember the grand success of the Congress held in London in 1867 ; it was a concentration of all the Veterinary Medical Associations, the colleges, and profession, and again in 1881, at which latter meeting this and the Liverpool Association stood aloof, in consequence of the fact that the Congress retained a rule not to allow those members of the profession who held only the Highland Society's certificate to enter on the same terms as those holding the diploma of the Royal College of Veterinary Surgeons. Now all this is changed—that rule is expunged—there is now no longer any excuse whatever to hold aloof from it. I cannot think but that every well-wisher of his profession will give it his cordial support. The view I take of it is this : that it will attract and be sustained by the most eminent, active, earnest, and energetic members of each Association in the three kingdoms, and, in fact, the whole of the profession ; much valuable knowledge must be developed ; it must inevitably raise our status, and by giving us greater power, will redound to the honour, credit, and advantage of our common profession ; and therefore that this Association should cordially co-operate with it, and render what assistance it can in developing the valuable results which must ensue.

It is well known the high importance which is attached to Lancashire, that "whatever Lancashire thinks to-day all England thinks to-morrow :" this is a proud, an honourable and enviable character for any county to enjoy ; and allow me to say that everywhere, wherever I have had the proud privilege of attending meetings throughout England, Ireland, and Scotland, I have done my best to hold the Lancashire Veterinary Medical Association up in that honourable position ; and for the purpose of keeping this and all other provincial Associations well to the front, I proposed at the meeting in London that the president and secretary of each Association should be elected upon the Council. I want these Associations to take the lead, and be copartners in the concern, to assume their rightful and legitimate position, and not be conspicuous by their absence. The National Veterinary Medical Association can be again a grand success without this Association, but I have an implicit belief, and urge that this Association will keep up its dignity and its honour by taking its rightful stand in this laudable movement, and closely associate itself with this band of advanced thinkers. By this and other Associations cordially espousing the cause, its success will be ensured. Such action does not necessarily tie each member, or any member, in fact, to become a subscriber or to attend the meetings. Every one who subscribes 10s. 6d. annually is entitled to attend the annual meetings, and will be supplied with a copy of each paper read, and a verbatim report of the discussion which takes place on each and every subject introduced, giving him the most recent, scientific, and valuable information on all subjects, such being compiled by the most eminent men in our profession. Therefore I beg to move, "That this, the

first, the largest, and most influential Association in the three kingdoms, espouse the cause, and decide to co-operate cordially with the National Association, with a view to ensure its success."

Mr. GEORGE FLEMING, Mr. BRIGGS, and other gentlemen followed, and pointed out and advanced the claims of the new Association.

This concluded the business of the meeting; the company then adjourned to dinner, and a most enjoyable evening was spent.

The usual quarterly meeting was held at the Blackfriars Hotel, Manchester, on March 14th; Mr. Wm. Woods, President, in the chair.

There were also the following members present, viz., Messrs. Peter Taylor, Thos. Greaves, Wm. Whittle, T. Hopkin, H. Ferguson, Wm. Leather, S. Locke, E. Faulkner, W. A. Taylor, W. Dacre, Jno. Lawson, J. Hart, T. Briggs, T. B. Cockshoot, J. W. Ingram, A. M. Michaelis, E. H. Leach, Jno. Litt, and J. B. Wolstenholme. Also visitors—Messrs. A. Leather, F. F. Crawford, Wormald, Horrocks, and Rice.

The minutes of the last meeting were read and confirmed, and the letters of excuse presented.

Mr. S. LOCKE proposed that "Mr. Ed. Kitchen, of Liverpool, be a member of this Association"; seconded by Mr. W. Leather, and carried unanimously.

The SECRETARY nominated Mr. Horrocks, M.R.C.V.S., of Burnley.

Mr. PETER TAYLOR then moved that "the earnest and warmest thanks of this Association be given to Mr. Wm. Whittle for the able and attentive manner in which he has represented our interests in the Council, R.C.V.S.' This was appropriately seconded by Mr. Greaves, and carried unanimously.'

Mr. Whittle having replied, the PRESIDENT brought forward the subject for the evening's discussion, *i.e.*, "The Buying and Selling of Horses and their Examination as to Soundness," as introduced by Mr. Hopkin in a paper read at the last ordinary meeting. A very interesting and lengthy discussion followed, in which nearly all the members present joined, and every shade of professional opinion was represented, Mr. William Leather drawing particular attention to the examination of the molar teeth by exhibiting the lower jaw of a cart-horse, in which was a supernumary molar associated with Caries.

Mr. HOPKIN replied, and then related a case in which a cart-horse was injured behind the scapula with the point of a shaft in collision. The only apparent mischief was a small flesh wound in the triceps extensor muscle, and the horse continued at work for some time. Ultimately, however, the respiration became seriously affected if put to any exertion, although in the stable the breathing was normal, the chest was resonant on percussion, and the respiratory murmur audible on auscultation. On one occasion the temperature reached 103° F. and the pulse remained at about 50; the horse continued to eat well, and was lively. In the end he was destroyed, and the autopsy revealed the presence of a large quantity of serous fluid in the mediastinum, which had forcibly compressed the lungs against the ribs, to which they were adherent; Periostitis and some Ostitis had evidently existed in the fifth and sixth ribs, from their condition in the specimens shown.

Mr. GREAVES proposed that "a vote of thanks be given to Mr. Hopkin for his valuable paper." This was seconded by the President and carried unanimously.

J. B. WOLSTENHOLME, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE annual meeting was held in the London Hotel, Edinburgh; the retiring President, Mr. C. Cunningham Slateford, in the chair. Present—

Professors Walley, Lewis, McFadyean, Baird, Williams, McQueen, and Hunter; Messrs. Philips, Cameron, Boyd, McArthur, Mitchell, Storie, W. O. Williams, Aitken, Moir, Constable, Thompson, Donald, Connachie, Robinson, Borthwick, Fairbairn, Hutton, and McFarlane; a number of students and the representatives of the Press, and the Hon. Secretary.

The minutes of the previous meeting having been approved, the Hon. Secretary and Treasurer (Mr. R. Rutherford) reported that during the past year they had increased their membership by nineteen, three of whom were admitted that day. The society was entirely clear of debt, and they had in the bank £23.

The office-bearers for the ensuing year were elected as follow:—President, Mr. C. Philips, A.V.D., 3rd Dragoon Guards; Vice-Presidents, Mr. John Storie, East Linton; Principal Walley, and Professor Lewis, Edinburgh; Hon. Secretary and Treasurer, Mr. Rutherford.

The following gentlemen were elected members:—Mr. Johnstone, Peebles; Mr. Hepburn, Coldstream; Mr. McArthur, Hawick.

The following new members were nominated for election at next meeting:—Mr. C. Philips, 3rd Dragoon Guards (at present an honorary member of the Society); and Mr. Clark, Secretary of the Scottish Central Veterinary Association.

The retiring President then delivered his valedictory address, in the course of which he remarked that the year 1882 had been an interesting one for the society, and they had made satisfactory progress. He reviewed the work of the association for the past year, and glanced at the different papers that had been read, speaking at some length on the importance of paying careful attention to the treatment of Pink-eye, and illustrating his remarks by a case that had come under his own observation. In vacating the chair he urged the society to do what they could to secure the election of Mr. Robinson, Greenock, and Mr. Borthwick, Kirkliston, as Scotch representatives on the Council of the Royal College of Veterinary Surgeons.

Mr. PHILIPS, the newly-elected President, having taken the chair, returned thanks for the honour conferred on himself and the Army Veterinary Department by his election as President. He would spare no personal exertions to follow in the footsteps of his worthy predecessor, and he hoped that when he quitted office it would be found that the Association had not retrograded, that it had not even stood still, but that it had advanced, in accordance with its motto, which was the promotion of amity among its members, the elevation of the social standing of the profession, and the discussion of scientific topics. (Applause.)

Principal WALLEY suggested that the members should look over the rules of the Association, and see wherein they might be improved, so as to place the Association on a still better footing. He also brought under the notice of the meeting the case of the widow and family of a veterinary surgeon in Ireland, who had been left destitute through the sudden death of the husband and father, who had been a student at Dick's Royal College, Edinburgh; and he invited subscriptions towards their assistance.

The meeting then proceeded to discuss the paper read at last meeting by Mr. H. Thompson, Aspatria, on "Salt on Land as a Preventive of Parasitic Diseases."

Professor WALLEY then read the following paper, by A. E. Macgillivray, Esq., M.R.C.V.S., Banff, N.B., on "Tubercular Stomatitis":—

Mr. Chairman and Gentlemen,—I felt considerably flattered on receipt of a request, from your Secretary and Mr. Walley, to appear before you with a paper on Tubercular Stomatitis. In my own mind I at once resolved to comply, but on consideration I came to a different conclusion, namely, to send you a paper on this subject, and let one of yourselves read it. On com-

XUM

municating this resolution to your Secretary and Mr. Walley, they agreed to same, and the latter kindly offered to read my communication. So, with all humility, I bring before you the following thoughts.

Bovine Tubercular Stomatitis, or, in other words, tubercle in the mouth and contiguous parts of cattle, is a subject which has for the last two years been almost continually before the profession. I had the honour of introducing the subject in the leading paper in the VETERINARY JOURNAL for January, 1881, and since then the matter has been discussed rather profusely both at home and abroad.

My attention was first drawn to the matter on perusing an article in one of the French veterinary periodicals, in which the writer described the disease as being of a gangrenous nature, and gave very full and interesting details as to symptoms and treatment, etc. In my first and second papers on this topic I combated this French veterinarian's ideas, and persisted in asserting that the disease was of tubercular origin. Several members of the profession, in short communications in our two veterinary magazines, supported me in my views, and brought forward various plans of treatment.

In a paper read before the Epidemiological Society of London in June, 1881, the Editor of the VETERINARY JOURNAL suggested the idea that the disease under our consideration was more of a diphtheritic than tubercular nature, and quoted largely from the writings of a Continental professor in support of his theory. I need not here reiterate all the plausible arguments brought forward in proof of this peculiar Stomatitis being neither more nor less than a phase of Diphtheria; suffice it to say that in a third communication on the subject I clearly showed the utter impossibility of such being the case.

In Mr. J. H. Steel's excellent "Manual of Bovine Pathology", this disease is described as occurring in the scrofulous subjects of *Omphalitis*, which it is said to accompany or follow. Mr. Steel calls it Stomatitis Gangrenosa. Here I merely note the scrofulous tendency of the patients.

In the VETERINARY JOURNAL for June, 1882, there appeared a well-written paper on "Muco-gastro-enteritis," the author of which insisted that Tubercular Stomatitis (so called) was merely the result or accompaniment of this "Muco-gastro-enteritis," and that it was very easily eradicated, the diseased deposits simply consisting of coagulated mucus and saliva, or the contents of stomach regurgitated and coagulated in the mouth. This theory was easily disposed of, its impossibility being discernible by even the meanest capacity.

In Hill's "Bovine Medicine and Surgery" we find this Stomatitis described as being gangrenous, cancerous, tubercular, and diphtheritic—rather comprehensive and complicated to be true. Mr. Hill considers that it "arises from tuberculous diathesis," but that, sometimes descending to the "pharynx and larynx, it assumes a diphtheritic type, with which, he is of opinion, the disease is associated."

In our veterinary periodicals, within the last three or four months, our attention has been repeatedly called to "a new disease," or the so-called *Actinomykosis Bovis*.* Now this new disease, or Actinomykosis, we are led to believe, is the proper and final designation for that malady which I have hitherto named Tubercular Stomatitis.

In passing I may perhaps be allowed to remark that this so-called "new disease" is simply the very ancient *Indurated or Schirrhous Tongue*, which generally occurs in bovines over one year old, being, in so far as my

* In no veterinary periodical, to our knowledge, has Actinomykosis been designated a "new disease," which it is not; but a reference to this Journal will show that it is named "a new infectious disease," which it is.—ED. V.J.

experience goes, most common in two-year-olds. I have never seen it in calves.

Here I leave this "new disease," and return to what unfortunately is as old as Tubercle itself, namely, Tubercular Stomatitis. This is a disease generally observed in juvenile bovines; in fact, as a rule, it may be said to be confined to early life; a case will, however, now and again crop up in adults, but such are very rare, create far less disturbance, and are easier to treat, than in juveniles.

Bovine Tubercular Stomatitis may then be set down as a disease of infancy, so to speak, its most typical forms being found in calves under three months old, and most commonly observed inside cheeks, on tongue, gums, etc. Whatever position within the mouth it may occupy, however, I have always made myself pretty certain that it originated in the milk supply, or from direct contagion. The danger of partaking of milk from tuberculous cows is now so well known and acknowledged that it requires very little stretch of the imagination to see the great risk with which calves daily imbibe tubercle-laden milk, their tender age rendering them more susceptible to the inroads of the tubercular virus. What more likely than the inception of such virus in the delicate mucous membrane of the mouth?

Tubercular lesions, deposits, and ulcerations, in mucous membranes and subjacent tissues, are nothing very uncommon—in fact, quite the opposite; and besides, such lesions have experimentally been produced in all parts of the mouth by feeding with tubercular material. The only wonder, then, considering the number of tuberculous cows, is how so few cases of this Stomatitis occur. No doubt in a good few cases that do take place a predisposition to Tubercle exists in the patient, thus rendering inception of the virus more likely. From observations made last summer, I am certain the virus gains access to mucous membrane superficially, and if successfully implanted, so to say, in a short time involves the sub-mucous tissues. At the seat of inception, or, as might be said, inoculation, there first of all appears a bright red spot, which under a medium object-glass has a slightly velvety appearance; this extends, and a little swelling or bulging at the infected spot is soon apparent. This bulging spot at first gets darker in colour, but gradually changes to a dirty grey, which, if left untouched, slowly alters to a more or less distinctly marked, and sometimes even brilliant yellow. When the disease attacks the anterior part or tip of tongue the yellow colour is generally quite bright.

During last summer I had five cases in young calves at one farm, and it was in one of these that I was enabled to make closer and more extensive observations as to the pathological changes which generally occur during the course of this disease than I had ever done before. The contagium in this case had gained admission per the mucous membrane of gum in upper jaw between the dental pad and lip. The attention of the servant in charge of the calves was drawn to this youngster by a slightly abnormal flow of saliva, which, there being already four others labouring under Tubercular Stomatitis, caused an examination to be made, when the diseased spot was discovered where I have indicated. Next day I examined same, and found a bright red spot about the size of a silver fourpenny-piece between dental pad and lip. This spot was slightly raised above the level of the surrounding mucous membrane, was very hyperdermic, velvety in appearance, and, to make a long story short, passed through all the changes above described in the course of a fortnight after my visit, when it was treated successfully after the usual fashion by scraping and applying the Sol. Cupri Sulph.

Unfortunately, the ravages of Tubercle did not end here in this little patient—it was only three weeks old to commence with—for, about a fortnight after it got over the Stomatitis, it was seized with a similar tubercular

affection between the digits of both fore feet. The lumps of half-cheesy, half-fibrous material which were dug out from between the digits closely resembled that scraped from the gum, but the disease dipped far deeper between the digits than at the gum. One foot got over this affection, but the other never did so; and the poor little patient died from pulmonary Tuberculosis when about four months old. The tubercular diathesis is very prevalent on this farm, consequently this youngster very likely had the tubercular taint from the first, and was thus more open to the inception of its virus—the gum becoming affected from the milk or by contact with some of the other four diseased creatures; while it is quite open to argue that the interdigital disease owed its origin to the drizzling of the virus-laden saliva from the creature's own diseased mouth? Be this as it may, however, I am quite certain of three things—(1) that this youngster suffered from this peculiar Stomatitis, and from a disease of a similar character in the interdigital space of both fore feet; (2) that on minute examination the diseased material from both gum and interdigital space presented the (hitherto) well-known characteristics of Tubercle; and (3) that the patient collapsed from the effects of true Pulmonary Tuberculosis when four months old. I offer no further comment on this "undoubted record of the life and death" of a tubercle-infested bovine juvenile.

It has often been questioned as to whether or not Tubercle can become developed in such situations as the mucous membrane of the cheeks, tongue, gums, etc.; and it must be confessed that the difficulty of access in these parts is no doubt great; but, in the light of the recent researches, discoveries, and experiments of Toussaint and Koch, such difficulty almost entirely disappears. Koch has apparently discovered, cultivated, and experimented with the *bacillus* of Tubercle, and found that this *bacillus* (*living*) or its *spores*, when separated from the other products or ingredients of what is known as "tubercular matter," produces (by inoculation) true Tuberculosis. This fact simplifies the question of the inception by mucous membranes of the so-called tubercular virus, *i.e.*, the bacillus of Tubercle *or its spores.*

No doubt these spores play a heavy part in the dissemination of Tubercle, more especially through such a medium as milk. Now, I have always insisted on the milk supply being the chief agent in the production of the Stomatitis under discussion, and have chronicled a great many instances in which there was no other way of accounting for its appearance.

More than this, however, if the Tubercle-virus actually consist, as asserted by Koch, of genuine and distinctly marked bacilli and spores, the possibility of the contagious nature of Tubercular Stomatitis is at once rendered not only apparent, but almost certain; for in all cases of this disease where we find the yellow cheesy stage well developed, these bacilli, with their innumerable spores, must exist literally in myriads, ready to go abroad "in quest of fresh fields and pastures new" with every discharge of drizzling saliva.

In connection with the question of the contagious nature of this disease, I have authentic information of a rather formidable outbreak of this Stomatitis on a farm where Tubercle is by no means unknown. Every year there are from fifty to sixty calves brought forth on this farm; and every year this Stomatitis (or "*the Cheesate*," as my informant calls it) puts in appearance in one way or another. Well, one year there were as many as twenty-six cases amongst *the calves* in this herd! The cattleman who attended on these calves is, I assure you, quite an adept at scraping and clearing away the cheesy lumps so characteristic of Tubercular Stomatitis.

In a recent number of the *Veterinarian*, I referred to the case of a cow suckling two calves: one was her own, and the other (a twin) from a neigh-

bouring farm. This stranger calf was attacked with Stomatitis, and had a cheesy deposit in the middle third of tongue laterally; in a short time the cow was seized after same fashion on the opposite side of the tongue. Both were treated and recovered. This twin's mother and the other twin were quite healthy and free from Tubercle; from whence, then, the Stomatitis? I could not make it out for a long time; but about two months afterwards I was called upon to treat this same cow for Pulmonary Tuberculosis; and at the present date this cow and both the calves have been for some three months under ground, all three having succumbed to the ravages of Tubercle!

Just allow me to quote one case more, which occurred in the practice of a friend of mine last summer. Here the patient was a calf which was slipped (aborted) in the seventh month of pregnancy. Shortly after calving the mother died from general Tuberculosis; and the youngster was attacked by this peculiar Stomatitis, and as it was evidently a worthless subject, was put out of the way—after being kept some days for my inspection. Unfortunately, I found it impossible to accomplish an eighty-mile journey to see even such a "unique case" of this tuberculous mouth disease. Being calved in the seventh month, it was consequently affected with this Stomatitis before, in the usual course of nature, it ought to have been in the world. In addition to the mouth lesions, this calf was completely infested with Tubercle.

The chief point in dispute, during the discussions which have taken place in reference to this Stomatitis, is as to whether or not it is of a tuberculous nature. I have always maintained the affirmative, and given, in my opinion, good, sufficient, and reliable grounds for so doing. In every case coming under my notice I have always been able to trace the same either directly or indirectly to a tubercular source; and besides, I have over and over again examined, in so far as my knowledge of microscopic investigation enabled me, the diseased material from the mouths of the subjects of this affection, and the results always tended to confirm my ideas of the tuberculous nature of this Stomatitis. More than this, however, at the time I wrote my third communication on this topic, adverting to the impossibility of its being Diphtheria, I submitted a portion of the "cheesy material," dug from the tongue of a young calf, to a medical gentleman of extensive experience and undoubted ability in the diagnosis and treatment of Diphtheria, and after minutely examining the same under the microscope, this gentleman informed me that, in his opinion, the "cheesy material" was neither more nor less than tubercular matter, and presented no resemblance to any diphtheritic products which ever came under his notice. This was so far satisfactory.

There is one thing which we would require to bear in mind when studying the general character and appearance of tubercular deposit on, in, or under the mucous membrane of any part of the mouth, namely, that we cannot expect to see the same *typical tubercle* as that presented on the pleura pulmonalis vel costalis; this, when we consider the position, exposure, and almost constant movement (or even attrition) of the parts affected, is utterly impossible. On this rock, I have no doubt, a great many superficial observers have grounded their erroneous ideas as to the nature of this tuberculous affection of the mouth in juvenile bovines.

I have already described my ideas as to the *modus operandi* by which the tubercle-virus gains admission to the mucous membrane of the mouth, as also the after consequences; and in connection with this part of the subject I may here state that, in so far as regards calves, the subjects of this Stomatitis, I have never met with *isolated tubercles* deeply embedded in the muscular substance of the tongue: wherever situated, and of whatever size, the tubercular mass has invariably had connection with the surface, and

XUM

been quite visible to the naked eye. Around this diseased deposit there is generally, as might be expected, a little swelling and slight inflammatory action; but we have decidedly no general enlargement nor induration invading the tongue where that organ is affected; neither have I ever observed atrophy to accompany or follow this affection in calves.

Some writers on this subject deny the prevalence of Tubercle in bovine juveniles, or any other juveniles very likely, and on this hypothesis build their denial of the tuberculous nature of this Stomatitis. I need scarcely reiterate what I have often already said in reference to the ravages of *Tubercle* in the young of every species, human and brute; for wherever, or in whatever species, the opportunity of infection or contagion by Tubercle is afforded, *there* we shall find, in such extremely susceptible hosts as *juveniles*, the ravages of Tubercle most deadly. And in such subjects need we observe that the mucous membrane of the digestive system, from end to end, is the most likely to receive or become affected by this fatal virus of Tubercle? As bearing on this point, I might refer to the already-mentioned calf, slipped in the seventh month of pregnancy, which was killed while suffering from this disease, and found to be otherwise infested with Tubercle. I may also be allowed to state that only this morning, I received a note from a friend of mine in the South of England, an M.R.C.V.S., saying that on Saturday last he made a *post-mortem* on a pure Oxford Down lamb, *which died when three days old*, and found its lungs "quite studded with small tubercles." He adds that he is much bothered with scrofulous disease of the joints and glands in his flock of Oxford Downs, more especially the lambs.

Approaching the subject of the treatment of this malady in calves, we are again opposed by the non-tubercular theorists with the remark that, "if the disease be Tubercle, what's the use of treating it? We may get rid of the local lesions externally, but what of the constitutional?" etc. Now I am quite aware that if once Tubercle has fairly a hold of the system, to talk of treating or eradicating the same is simply talking of what no one in his senses would ever propose doing. I may be allowed to remark, however, that in Tubercular Stomatitis the lesions are not only external and easily got at, but the causative virus has only recently been implanted there from external sources, and very likely has no further hold of the system. Therefore, if for no other reason, I would go in for treatment; but there are other reasons, as, for example, when one is called to treat a calf for a mouth lesion, which is perhaps easily seen to be of tubercular nature, it will not do to shake one's head, and, muttering "Tubercle!" order it to be killed—with, perhaps, an eye to a *post-mortem*. No, I say; treat at once energetically.

On examining your patient, you will find a profuse discharge of saliva, very fœtid breath; and, if tongue be affected, mouth slightly open; if anterior part of lower jaw, the contiguous lip will be swollen; if inside cheek, the outside of same will bulge a little, and so on. You now open the mouth, and very likely at once detect *somewhere* a lesion such as I have already described. Almost invariably, the mass of Tubercle is confined to one spot; and herein it differs most remarkably from the "new disease," the so-called Actinomykosis, in which you find the "nodules and nests" scattered about here and there throughout the entire body of the tongue. Well, having found this lesion, or greyish-yellow-looking lump, the best plan is to scrape it as thoroughly out as you possibly can, and apply Sol. Cupri Sulph. or Tinct. Ferri Mur. to the remaining ulcerous-looking sore. It will generally be found necessary to repeat this rather rough, but ultimately successful treatment.

I have chronicled a few instances where Tubercle afterwards appeared in other parts, such as lungs, salivary glands, testicles, spermatic cord, etc., of animals which had, *when calves*, been successfully treated for Tubercular Stomatitis. Such cases only tend further to confirm my ideas as to the true nature of this Stomatitis.

XUM

In conclusion, gentlemen, I have considered it best to give you my thoughts in this simple form, as I saw no necessity to enter into a scientifically-divided treatise on this disease, giving history, geographical distribution, pathology, symptoms, diagnosis, etc., as I am candidly of opinion that we have merely to deal with a single phase of the too well-known and greatly to be dreaded malady—Tuberculosis !

Principal WALLEY said he dissented from some of the views put forward by Mr. Macgillivray. In the case of the Oxford Down lambs alluded to, for instance, it was well known that they could scarcely examine the lungs of lambs without finding tuberculous matter, but that was simply due to the irritation produced by the embryo of the strongylus. He never yet saw Tubercle in sheep, and he had always held that ovine stock resisted it. Granted that the disease of which Mr. Macgillivray wrote was Tubercular Stomatitis, what was the use of treating it? He held that an animal showing signs of Tubercle should be immediately killed, and should not be used either for breeding purposes or for human food. They might get rid of the local lesions, but breeding animals would transmit the tendency to their offspring, and it was better to destroy them at once than try to cure them.

It was agreed to adjourn the discussion on Mr. Macgillivray's paper till next meeting, and, on the motion of Principal Williams, a vote of thanks was in the meantime accorded him.

The Royal College.

Mr. CAMERON, Berwick, said it was desirable that they should know the views of the candidates for their representation at the Council of the Royal Veterinary College.

Principal WILLIAMS agreed with Mr. Cameron, and said he was seeking re-election to the Council board at the hands of the Yorkshire Society, and if returned he would do his best to watch over the interests of the profession. He strongly objected to the proposal to increase the examination fees of students, so long as they were, as at present, ample to meet the expenditure and leave a handsome surplus. (Applause.) He looked upon it as simply disgraceful that the examining board, composed of men who, like himself, had risen from the ranks, and knew the value of a £5 note, should propose to raise the fees of struggling students, with poor parents, who had nothing but their own exertions to depend on for a livelihood. (Applause.) He thought, however, the number of examiners should be increased, and they might be doubled without entailing any extra expenditure on the College.

On the motion of Principal WALLEY, a vote of thanks was given to the retiring President and Vice-Presidents for their services during the past year.

Interesting Cases.

Mr. OWEN WILLIAMS submitted a specimen of *echinococcus veterinorum*, one of nine removed from the liver of a horse ; and a unique case of *cœnuris cerebralis*, found in the connective tissue of the thigh of a rabbit, and which was supposed to exist only in sheep.

Annual Dinner.

The members afterwards dined together, about thirty gentlemen being present. The chair was occupied by the President of the association, Mr. Philips ; and Principal Walley, one of the Vice-Presidents, discharged the duties of croupier. During dinner, and in the course of the evening, the band of the 3rd Dragoon Guards performed selections of music.

After an excellent dinner, the CHAIRMAN gave "The Queen and the Royal Family."

XUM

The CROUPIER proposed "The Navy, Army, and Reserve Forces," for which Mr. Robinson, Mr. Nicholson, and Mr. Macfarlane respectively responded.

Principal WILLIAMS proposed the health of the retiring President, who had always been a warm worker for the Scottish section of the profession. He spoke highly of the energy and devotion of Mr. Cunningham, and expressed the pleasure with which he had listened to him examining students.

Mr. CUNNINGHAM made an appropriate reply, in the course of which he said that, while he went in for a united profession, he also desired justice alike for England, Scotland, and Ireland; but when they found that all the board of examiners and twenty-eight of the Council resided in England, he thought that a very unfair representation. (Applause.)

Mr. ROBINSON proposed "The Scottish Metropolitan Veterinary Medical Association," mentioning that he was not only one of those who assisted at its inauguration, but he was also one of the founders of the West of Scotland Association, which was the parent of all the others in the kingdom.

The CHAIRMAN suitably acknowledged the toast, remarking that the profession was rapidly approaching the position it ought to occupy, and the value of the papers and subjects discussed by that and kindred societies was beginning to be felt throughout the country.

Mr. THOMPSON gave "The Schools," and Professor Lewis "The Visitors," after which a pleasant evening was brought to a close.

R. RUTHERFORD, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

THE meeting of the above society was held on the 1st March, at Red Lion Square, Mr. J. Woodger occupying the chair. The other Fellows present were Messrs. T. Burrell, A. Broad, J. Broad, Arthur Broad, A. R. Charles, G. R. Dudgeon, G. Gray, H. J. Hancock, W. Hunting, T. S. Price, J. Rowe, W. Roots, F. G. Samson, and H. King Shaw.

Mr. SAMSON exhibited a small renal calculus, with the kidney of the dog from which it was taken. After a careful *post-mortem* examination, he could discover no other cause for the animal's death. The symptoms shown had been occasional constipation, pain on pressure over the loins, loss of appetite, and great thirst. Some discussion followed upon the question of the cause of death, and, in answer to queries, Mr. Samson stated that the body was well nourished, no wasting had occurred, no blood was voided with the urine, and the stomach showed no evidence of Gastritis or any abnormality.

From the latter statement Mr. ROWE said he felt compelled to express dissent. He thought there must have been a toneless, flaccid condition of the gastric muscular coat, such as he invariably found exist when dogs had suffered from extreme thirst, with vomition after drinking water.

Mr. BROAD showed the head of a collie dog, eight months old; upon the palate, lips, and tongue were a great number of warty growths, most of them exceeding a quarter of an inch in diameter, and many being in clusters, especially on the dorsum of the tongue; they extended on the mucous membrane as far back as the posterior part of the fauces. Treatment was not continued long enough to determine whether they would reappear after excision.

An essay on "Contracted Feet in Horses," written by Mr C. Sheather, was then read. The essayist chiefly confined his remarks to contraction as a disease, pure and simple; a state of foot brought about by many causes, among which he enumerated inactivity, hot stables, and a bad system of shoeing. As an illustration of inactivity producing what he termed atrophy of the feet, he said he knew a stable of eight horses which

XUM

had been for a long period with scarcely any exercise but a short daily walk: all had now contracted feet. He minutely described the characters and peculiarities of the contracted foot, and the altered gait produced, and particularized the treatment to be adopted.

College Building Fund.

At a meeting of Council of the Central Veterinary Medical Society, on March 1st, it was unanimously resolved to make a donation of fifty guineas to the "Building Fund" of the Royal College of Veterinary Surgeons.

ALFRED BROAD, *Secretary.*

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE tenth half-yearly meeting of the above Association was held at the Norfolk Hotel, Norwich, on February 13th, 1883, under the presidency of Mr. J. D. Overed. The members present included Messrs. A. H. Santy and F. Low, Norwich; W. Shipley, Gt. Yarmouth; T. Auger, Wymondham; E. Barker, St. Faith's; J. Hammond, Bale; J. K. Gooch, Holt; R. Howard, Thetford; D. G. Hunting, Loddon; G. C. Hunting, Stalham; S. Smith, Lowestoft; H. Newson, Beccles; and the Secretary.

Letters were received from several members regretting their inability to attend.

The minutes of the last meeting were read and confirmed, and the treasurer's accounts adopted, by which a balance of £18 18s. 4d. was shown to the credit of the Association.

The officers of the Association were unanimously re-elected to their respective offices, and Mr. R. S. Barcham, M.R.C.V.S., Paston, near North Walsham, was elected a member of the Association.

Mr. SANTY, who had kindly undertaken to collect subscriptions to the "Fleming Testimonial Fund," reported that he had transmitted the sum of £15 to the treasurer on behalf of that object, with the names of the subscribers: and the president (in the unavoidable absence of Mr. G. A. Banham) drew the attention of those present to the claims of the National Veterinary Association to the support of the members, several of whom promised to subscribe.

Mr. W. SHIPLEY (the senior inspector in the county of Norfolk), at the request of the president, then introduced, as a subject for discussion by the members, the Contagious Diseases (Animals) Act as in operation in this county, where none but duly qualified men are appointed veterinary inspectors. The number of these is about twenty, each having a well-defined district, comprising a certain amount of parishes, under his jurisdiction, and for which he is responsible to the local authority for the due observance of the Act and the Orders in Council when issued.

Mr. Shipley first briefly noticed Cattle Plague, which, happily, was practically unknown to many junior members of the profession, having for some years past been eradicated from this kingdom, and with our present knowledge of the nature of this disease, and with the regulations now in force he did not think it was likely to recur; but, should it unhappily do so, measures short, sharp, and decisive would be employed to stamp it out. As to Contagious Pleuro-Pneumonia in cattle, which once prevailed so extensively in this country, and inflicted such serious losses upon farmers and others, the Act had been productive of great benefit, as the number of cases was now reduced to a minimum. In his own district (which was an extensive one), he had not seen a case for two years. Foot-and-mouth Disease, or Epizootic Eczema, was a disease which every now and again appeared in

our midst, and gave rise to much anxiety, inconvenience, and indirect loss to the British agriculturist and stock-owner. It was essentially an imported disease, and might, he thought, be permanently eradicated if more stringent measures were adopted and greater caution exercised in the importation of foreign stock from infected countries. On the first appearance of disease they could not act with too much promptitude, and here the Act was altogether defective, and certainly did not meet the necessities of the case; much valuable time was lost, and the disease, instead of being nipped in the bud, was disseminated in various directions, and allowed to spread its ravages far and near. Under the existing regulations, if an animal is discovered in a public market diseased, that animal can alone be slaughtered, while those in contact with it are allowed to be removed, carrying the disease with them wherever they go, and creating new centres of infection.

Sheep-scab has considerably decreased under the operation of the Act, and is very seldom seen in this part of the country. Nevertheless, when it does appear in our midst, it is a disease which requires very careful attention, and extreme caution should be observed in giving a certificate of recovery. Sheep-pox is not likely to trouble us. Swine Fever has not prevailed to any serious extent of late, and the Act seems able effectually to deal with this disease when it does exist.

Glanders and Farcy happily are seldom seen in this county, and when it is brought under our notice, our duty is clearly indicated, and the pole-axe is the only remedy allowed. But he considered it a great injustice that no compensation to the owner was awarded in these cases.

An animated discussion followed, in which most of the members took part, an opinion being generally entertained that Hydrophobia and anthracoid diseases should be included in the Act; that more care should be taken to prevent the introduction of disease by foreign animals; that animals in contact with those suffering from contagious disease should be included in the operation of the Act; that the owners of animals dying, or slaughtered (when suffering from contagious disease) by order of the local authority, should be compensated; that the Inspector should be empowered to put the Act in force immediately upon receiving information from any source, of the existence of contagious disease in his district; that a chief Inspector should be appointed for every county, who might be consulted by the local Inspector in any case of doubt or difficulty in the discharge of his duties. That every duly-qualified veterinary surgeon should be appointed Inspector for the immediate neighbourhood in which he resides. The usual votes of thanks terminated the proceedings.

J. D. OVERED, *Hon. Sec.*

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THE fortnightly meeting of this association was held on February 8th in the lecture-room of the Veterinary College, Professor McEachran in the chair. Besides a large number of students and veterinary surgeons, there were present Ald. Fairbairn, Mr. Bickerdyke, Mr. Morgan, Mr. Versailles, and others interested in the subject of discussion—inspection of meat and abattoirs. After routine business, Mr. BELL read an exhaustive paper on "Navicular Disease;" Mr. Clement reported the operation of lithotomy on a horse, performed on Monday last, at the College, by the Principal, and exhibited the calculus, weighing three-and-a-half ounces, the horse being now considered out of danger, and about to be discharged. Mr. DAUBIGNY then read a paper, in French, on "Meat Inspection and Abattoirs," in which he pointed out the defects of the inspection as at present carried on at the abattoirs, urged the necessity of *ante-mortem* as well as *post-mortem*

XUM

examination by scientific inspectors, who should be microscopists, so as to enable them to detect the presence of parasitic diseases. He noticed at length the thorough system followed by the Governments of France and Germany, and in conclusion, urged that the inspectors should be well paid, so that they should be independent, and they should have the moral support of the community, besides the proper legal authority, to carry out thorough inspection in the public interest. The paper was a very able and scientific exposition of the subject, which was listened to with marked attention, and called forth eulogistic remarks by Ald. Fairbairn, Mr. Bickerdyke, Mr. Morgan, and others, who urged improvements in the bye-laws giving inspectors power of confiscation, moving cattle markets to the abattoirs, having cattle kept twenty-four hours before being killed.

Dr. McEACHRAN, in a few remarks on the subject, referred to its great importance. One of the most important duties for a college like this was to prepare the students to become thorough sanitarians. Meat inspection was a most important sanitary question. There could be no doubt that scientific inspection was the best mode. Years ago it was laughed at, but to-day it was gaining many supporters. He referred to the fact that pork from the United States was shut out from Germany and France because these countries knew that there was no inspection in the United States. It remained for Canada, Dr. McEachran said, to open up this field, and thus gain an immense trade with these countries. He said that scientific inspection would be the very backbone of the butchers' trade, who would lose nothing by its adoption. He expressed the opinion that the inspectors should all have the power of confiscation, as without this power their inspection was worthless; and he hoped that the agitation for this improvement would be kept up until it was obtained. He was also of opinion that slaughtering outside the city limits should be abolished, and that no animal should be slaughtered for human food until it had rested twenty-four hours.

On motion of Ald. FAIRBAIRN, seconded by Dr. ALLOWAY, a vote of thanks was returned to the lecturer for his interesting paper, and the meeting then adjourned.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly Council held on March 7th Colonel Kingscote presented the following report drawn up by Professor Robertson respecting the Foot-and-mouth experiments at the Royal Veterinary College :—

Since the last report a fresh trial has been made in the same direction as the previous experiments, and on the same lines, viz., testing the susceptibility of home-bred animals to be contaminated directly from material yielded by the imported. This time the experiment has been attended with results clear and positive.

In the beginning of December, 1882, having obtained two yearling steers, these were placed in clean and previously prepared boxes, and daily observations made as to their general health and internal temperature.

On the 12th December a quantity of saliva and other secretions of the mouth, obtained from cattle slaughtered at Deptford while suffering from the fever, was obtained, and at 5 p.m. a portion of this was dropped on the muzzles of both steers, their state of health being at that time apparently good—the temperature of No. 1 103° F., of No. 2 102° F. Twenty-four hours afterwards both animals were feeding well, although exhibiting a trifling rise in temperature. On the morning of the 14th No. 1 was dull, not disposed to rise, and taking little food, the temperature 105·4° F. No. 2 seemed in every respect natural. Towards evening No. 1 showed a little frothy saliva at the angles of the mouth, with an occasional cough, but no

XUM

appearance of vesicles on the buccal membrane. The morning following, this animal give unmistakable evidence of being very ill: it was not inclined to rise, refused food; the temperature was now at its height, 106·3° Fahr.; while over the tongue, dental pad, and buccal membrane were several well-developed vesicles. These latter did not show between the digits or around the coronet until the day following, the 16th. At this time several of those in the mouth had ruptured. From the 15th to the 19th this animal's temperature continued high, settling on the latter date at 101° Fahr.

From the period of the rupture of the first vesicles until the 21st, a wash of 5 per cent. of salicylic acid in a solution of acetate of ammonia, which was afterwards diluted with an equal quantity of water, was employed for the local lesions. This seemed to expedite their healing; not, however, I believe, more than some other mild astringents do.

On the morning of the 17th, finding that No. 2 steer showed no evidence of being affected from the employment of the saliva on the 12th, a little of the same material from his fellow, now in the height of the disease, was taken, and gently smeared over his muzzle.

No indication of disturbance occurred until the morning of the 22nd, when, besides being somewhat dull and disinclined to eat, the internal temperature rose to 103° F. Vesication on mouth and feet appeared next day. Although this animal seemed to suffer more from the local lesions than his fellow, the temperature never reached the same height, 104·6° F. being its maximum.

On the 29th of December a yearling steer which had been reared at the College, but had not been in contact with the affected animals, except that he was attended by the man who waited upon these—not, however, being fed or watered from the same vessels—showed symptoms of the fever: in a few days he passed through the different phases of the disease in a similar manner to the inoculated.

On the 28th of January, when the animals had fairly recovered from the induced fever, a fresh supply of saliva was procured from the same source as the first, and sprinkled over the muzzles of both animals as before; also, and at the same time, sixty minims of the liquid were injected into the subcutaneous tissue in the inferior part of the neck of ox No. 2. Succeeding this treatment no indications of general disturbance followed, with the exception of a slight elevation of temperature. On the 30th a circumscribed swelling of two or three inches in diameter, and very tender, appeared around the puncture which had been made in the skin of the neck; this in a few days began to discharge a little disagreeably smelling fluid, and continued to do so for a week, shortly after which time the local infiltration had entirely disappeared.

These two animals have been sold, and two others purchased. With these latter it is now intended to try the effects of the direct conveyance into the blood stream of the disease-bearing fluid of the vesicles, with the object of determining whether a modified fever may be produced, which shall confer a protection from the natural fever.—I have the honour to be, my lords and gentlemen, your obedient servant, W. ROBERTSON.

This report was adopted, and Sir Brandreth Gibbs was added to the Committee.

Sir MATTHEW WHITE RIDLEY said that, if in order, he should like to call the attention of the Council to the spread of Foot-and-mouth Disease throughout the country, and to ask whether it was not their duty to take some action with a view to impress upon the Government the necessity of doing something in the same direction as was recommended by the Royal Commission on Agriculture. He believed that 11,000 or 12,000 animals were reported to be diseased throughout the country, and they all knew

how England was blockaded against Ireland, Scotland, and neighbouring countries. It really seemed to him that such a condition of things had been reached that it was their duty to approach the Government, and to ask them to carry out a further step to prevent the importation of any cargoes of live animals from countries as to which they were not satisfied that there was no Foot-and-mouth Disease. In the case of Pleuro-pneumonia he believed it to be very nearly possible to prevent the importation of that disease by slaughtering at the port of debarkation, but it was different with Foot-and-mouth disease, which was so contagious and so easily spread that very little good came of slaughtering at the port. At the Northumberland County Sessions they thought of taking some action in the matter, and he told the magistrates that he should ask the Council of the Royal Agricultural Society whether they did not think it their duty to ask for the total and absolute prevention of the importation of all live animals from countries in which the Privy Council was not satisfied that no Foot-and-mouth Disease existed. He need not enlarge upon the importance of preventing the spread of this disease. It was important not only to the farmer, but to the consumer, because the continuance of the disease must tend very largely to increase the price of meat. In view of the serious state of things—the serious restrictions upon the agricultural community which are now imposed, and which have no practical result; in view of the insecurity of slaughter at the port of debarkation, it was their duty to ask the Prime Minister to receive a deputation on the subject. It was quite true that the Privy Council had been active, but in spite of their care it was impossible to prevent the spread of the disease under the existing regulations. He ventured to propose, "That, in view of the great spread of Foot-and-mouth Disease throughout the country, the Prime Minister be asked to receive a deputation from the Society, for the purpose of urging upon the Government the necessity of taking such further steps as will prevent this disease being imported from foreign countries."

Earl CATHCART remarked that in Yorkshire they were blockaded in their own farms; they could not move animals except as meat slaughtered for the market. That state of affairs had been in existence for some little time.

The Earl of RAVENSWORTH pointed out how much the public is suffering in consequence of the disease, and observed that the channels by which it is spread are so subtle and so numerous that there seemed to be no effective mode of preventing the extension of the disease except by adopting some such plan as that contemplated by the resolution.

Col. KINGSCOTE seconded the motion. He would be the last person, he said, to do anything that would tend to enhance the price of meat to the consumer; but, at the same time, he knew full well what the agricultural community was suffering from this horrible and insidious disease, and he had no hesitation in saying that if this disease could be stopped, and if the Privy Council were enabled and when enabled would carry out the restrictions, not to allow cattle to come from foreign countries where disease existed, although the first operation of that measure might enhance the price of meat for a very short time, in a few months—so greatly would the dead-meat trade have increased—the price would go down again. The dead-meat trade had never been properly developed, and never would be under the existing regulations. This disease was brought to England, month after month, from foreign countries, and it would never be got rid of until the importation of animals from countries where the disease existed was prohibited. As regards the restrictions now in force, there was one fault he found with local authorities, viz., that a few days' delay always occurred when the disease broke out before

XUM

the restrictions were put into force. He wished that some means could be adopted to make it imperative upon local authorities within twenty-four hours after the disease broke out to make a certain area round that place.

Mr. RAWLENCE mentioned a case that occurred a fortnight ago at Bristol. A large cattle-dealer in his neighbourhood was at Bristol, and in the market he saw two animals evidently suffering from Foot-and-mouth Disease, and they were put into a cattle-truck, and sent to Reading to be slaughtered. No easier mode of spreading the disease could be devised.

The PRESIDENT: That was the fault of the Bristol local authorities.

Sir MASSEY LOPES cordially agreed with Sir Matthew Ridley's motion.

Mr. WAKEFIELD was very glad that the matter had been brought forward. It was discussed yesterday at the Chamber of Agriculture, and figures were then given to show that the importation of live meat is not so great as is generally supposed by the consumer. The figures showed that the importation of live as to dead was as one to two—*i.e.*, about one-third of the meat imported is live, and two-thirds dead. What proportion that bore to the meat of the country he did not know, but if it could be shown that the consumption of home meat was very largely in excess of the importations of meat from abroad, it made their present case all the stronger. He thought that a great deal might be done by taking care that no delay occurred in putting the regulations into force. In Germany a *cordon* was drawn round infected areas in case of outbreaks of disease.

Mr. FOSTER asked whether the local authorities possessed the power to put the restrictions in force without applying to the Privy Council. Colonel Kingscote very properly said that there was a certain amount of delay in getting the regulations put into force, but in Northumberland they were under the impression that an application to the Privy Council was necessary.

Mr. JOSEPH MARTIN believed that the local authorities had the power to declare an infected place, but not an infected area.

Mr. FOSTER said that while waiting for the authority of the Privy Council time was given for the disease to spread.

Mr. JACOB WILSON reminded the Council that the question before them was not the regulations as to carrying out the present restrictions. The Contagious Diseases (Animals) Act had been properly carried out, but he feared that whatever powers the Privy Council had they did not possess them in the form which would ever warrant persons to embark capital in the establishment of a dead-meat trade; and he thought they should ask the Prime Minister to amend by legislation the present Act. The Privy Council had the power to schedule any country, and to take off the restrictions when they thought proper; therefore no body of men would embark in a large dead-meat trade. Mr. Mundella had thought proper to assert that by prohibiting the importation of animals from countries in which disease exists the price of meat would be raised three pence a pound; but nothing had been advanced in support of that assertion. Sir Matthew ought to be thanked very much for bringing the matter forward, for it was the burning question of the moment, and it was the duty of the Council to take the lead in the matter. Other societies besides the Chamber of Agriculture, he hoped would press the matter upon the Government.

Professor BROWN said there were one or two points which had been touched upon on which he should like to speak. First, although, as Mr. Wilson said, the discussion had no relation to the carrying into effect of the regulations now in force, he might usefully state what the regulations were. When an inspector discovered disease on any premises it was his duty at once to make a declaration and serve a copy of that declaration on the owner of those premises, and he might, if he liked, serve a copy of it on the owner of adjoining premises. The mere serving of that declaration consti-

XUM

tuted that place an infected place. The local authorities were then called upon to meet and to determine whether the inspector's declaration was correct or not, they having the power to alter or to determine finally. They could not, unfortunately, declare an infected area: that could only be done by the Privy Council. His Grace, the Duke of Richmond, would probably recollect that it was attempted to give this further power, but it was resisted so strongly in Committee that it was abandoned. Touching upon the question before the Council, he should like to remark that the two points which had been brought forward in close connection were totally distinct. The restrictions at present imposed in this country for the purpose of preventing the spread of Foot-and-mouth Disease had nothing whatever to do with the importation of disease. The fact was that the disease now existed in the country, and there was no reason to infer that the recent accession of the disease was in consequence of foreign importations. The disease in the latter part of 1880 was undoubtedly introduced into the country by a cargo of foreign cattle. At that time, in the beginning of September, the Privy Council believed the country to be really free from the disease; but from the introduction of French animals the disease spread throughout the country, and at the end of the year the application of restrictions to fairs and markets became necessary. In the summer of last year the disease was so far reduced that there were some hopes of its extinction; but unfortunately it lingered in the Midland counties, and from thence spread to Norwich. From Norwich Hill the disease spread in every direction. The Norfolk authorities complained that the Privy Council put them under restrictions when they were the victims, but the Privy Council knew perfectly well that when disease appears at Norwich Hill it means the extension of the disease throughout the country. The restrictions were certainly having a very beneficial effect throughout the country: the outbreaks reported on Monday fortnight were 101; a week later, 70; and last Monday they had declined to 50. These facts went to show that something is gained by restriction, and when he mentioned that during last year the number of outbreaks and attacks were between 4,000 and 5,000, and that in 1871 over 4,000 outbreaks and over 30,000 attacks were frequently reported in one week, he thought they would be disposed to admit that if they could make a whole year's outbreaks and attacks when restrictions were in force represent one week's outbreaks and attacks when the country was without restriction, it was clear that the restrictions were beneficial. In reference to the question of prohibition of the importation of life animals from abroad, it occurred to him at the moment that the proposal which the Council contemplated bringing before the Government was a totally new one. There had been memorials without number, asking that the Government should exercise its powers, and prohibit the importation of animals from all countries. Other suggestions had taken the shape of prohibitions from all countries in which disease existed, which really amounted to the same thing, because there was positively no country absolutely free from some form of disease. Total prohibition the Privy Council had no power to insist upon, but the Act (section 35) distinctly stated that "the Privy Council may from time to time make such general or special orders as they think fit for prohibiting the landing of animals or of any specified kind thereof, or of carcases, fodder, litter, dung, or other thing, brought from any specified foreign country or any specified part thereof." If the proposition was only that the Privy Council should prohibit from a country in which the particular disease Foot-and-mouth Disease existed, and for so long a time as Foot-and-mouth disease existed in that country, he believed that the powers of the Privy Council would extend so far; but he wished to call the attention of his Grace to the fact that this was only one of a number of propositions which would come before the

Government, and the other propositions, he believed, would be of a much more sweeping character. Their object would be the entire exclusion of importations from abroad, and the substitution of a dead-meat trade.

Mr. JACOB WILSON: Is it a fact that diseased cattle have been imported and are constantly being imported into Deptford? and that an outbreak of Foot-and-mouth Disease was traced to the use of the intestines of sheep for feeding pigs?

Professor BROWN: That is true: the outbreak occurred in the premises of a butcher in the town of Deptford. We have had so many cargoes of diseased animals from France during the last few months that the Privy Council have prohibited the importation of animals from the port in that country from which they have chiefly come—namely, Boulogne. I wish to reiterate that the present accession of the disease is not due to the importation of animals from abroad, because we have so clearly traced it to Norwich Hill.

Mr. JACOB WILSON: And diseased animals have also been landed from America in Liverpool?

Professor BROWN: Yes.

After a short conversation the resolution was unanimously adopted, and a deputation was accordingly appointed.

Army Veterinary Department.

Gazette, March 2nd.

Veterinary Surgeon C. W. Gillard to be Veterinary Surgeon, First Class, in recognition of his services during the recent campaigns in Afghanistan and South Africa. The under-mentioned Veterinary Surgeons to be Veterinary Surgeons First Class, in recognition of their services during the recent campaign in Egypt:—H. Thomson, I. Matthews, G. J. R. Rayment.

Gazette, March 6th.

Veterinary Surgeon J. W. Evans to be Veterinary Surgeon, First Class.

The above promotions are to date from February 15th.

The British troops which were in Egypt during the recent operations, have been awarded a gratuity to compensate for the losses they incurred, this being issued according to the rank or relative rank of the recipient. In this respect the veterinary officers have been fully recognised, the gratuity to them being as follows:—Principal Veterinary Surgeon, £34; Inspecting Veterinary Surgeon, £32; First Class Veterinary Surgeon, £24; Veterinary Surgeon, £15.

Parliamentary Intelligence.

House of Commons, March 5th.

GLANDERS IN INDIAN CAVALRY REGIMENTS.

DR. CAMERON asked the Under-Secretary of State for India whether a regiment of Bengal Cavalry, infected with Glanders, and without being accompanied by a veterinary surgeon, was sent to Egypt; whether many horses were destroyed while in Egypt, and a troop had to be placed *hors de combat* at Suez, the horses of the other regiments and corps being placed in

great peril of infection; if, on the return voyage to India and subsequently, many more of these Bengal Cavalry horses had been destroyed for Glanders; and if an officer of an infantry regiment died at Lucknow of Glanders, as well as two natives, the persons having been on board ship with these horses returning from Egypt, and there becoming infected; and whether it was also the fact that with more than 7,000 animals despatched with the expeditionary force from India to Egypt, there were only two veterinary officers, while the proportion in the Imperial Army was one veterinary surgeon to 250 or 300 animals.

Mr. J. K. CROSS: An inquiry was made two months ago of the Government of India as to the precise extent to which Glanders prevailed among the Bengal Cavalry during the recent campaign and previously. Their detailed report may be shortly expected. No information has reached the India Office of any officer or other person having died of this disease after their return to India, but inquiry will at once be made on this and other points raised by my hon. friend. British veterinary surgeons are never employed on the establishment of the Bengal Native Cavalry, but instead, each regiment has on its establishment two "Salootrees" (a very competent body of men), and these accompanied the corps to Egypt. The recently organised transport service is also provided with "Salootrees," and the full war establishment was attached to the transport in Egypt. Each battery of artillery had its British veterinary surgeon, and a veterinary surgeon on the staff accompanied Sir Herbert Macpherson as superintendent.

House of Commons, March 13th.

GLANDERS.

In reply to Dr. Cameron, the Marquess of HARTINGTON stated that two horses of the 7th Dragoon Guards, one of the artillery, and six animals belonging to other corps had been destroyed in Egypt. These troops were encamped on ground previously occupied by the Bengal Cavalry, some of whose horses had been destroyed for Glanders before they returned to India. The question had been referred to India.

House of Commons, March 16th.

MULES FOR EGYPT.

Dr. CAMERON asked the Surveyor General of the Ordnance whether it was true that Major Carré was sent along with veterinary surgeon the Hon. M. H. Mostyn to Smyrna to purchase mules for the Egyptian Expedition; whether Major Carré purchased 700 mules contrary, in the case of a large proportion, to the advice of veterinary surgeon Mostyn; and whether Mr. Mostyn refused to sign the returns of the animals as fit for service; whether, on the arrival of the 700 animals at Ismalia, a Board, ordered to report upon them, ordered two-thirds of them to be destroyed or sold as unfit for service; what was the precise number of the animals thus destroyed and sold; what sum was paid for them at Smyrna; what was the approximate cost of their transport to Ismailia; and what sum was realised for those of the condemned animals which were sold.

Mr. BRAND said it was true that Major Carré was sent with Mr. Mostyn to Smyrna to purchase mules for the Egyptian Expedition. Major Carré's instructions were to take the advice of the veterinary surgeon, and it was unfortunate that on several occasions he did not do so. The Board did not order two-thirds of the animals to be destroyed. Eight of them were destroyed. The price paid for mules at Smyrna was £26 10s., which included the freight to Ismailia.

House of Commons, March 19th.

CATTLE PLAGUE IN EGYPT.

Dr. CAMERON asked the Under Secretary of State for India whether i were true that two outbreaks of Cattle Plague occurred among the oxen sent from India for the use of the troops in Egypt; whether in one of those outbreaks the affected animals, instead of being destroyed and buried, were simply driven forth to die; and whether the result was that the road to Kassassin having been thus infected, cattle for the use of the troops were subsequently obliged to be sent up by train?

Mr. J. K. CROSS: As the Indian contingent was placed under the control of the Commander-in-Chief immediately on its arrival in Egypt, the reports of the Veterinary Department have been made to the War Office, and not to the India Office.

Obituary.

DEATH has been more than usually busy among the members of the profession of late, but our obituary for this month is the heaviest recorded for some time.

First, we regret to have to announce the demise of Mr. William Field, F.R.C.V.S., at Bournemouth, in the 78th year of his age. The name of Field has been long and honorably known for three generations as that of gentlemen who have practised with the greatest success in London, and who were always considered the leading Veterinary Surgeons in England. The deceased gentleman held a most distinguished position for more than half a century, was himself the son of an excellent practitioner, and trained two of his sons to the profession, both of whom have been dead for some time so that the family is extinct, so far as the profession is concerned. Mr. Field took the greatest interest in the progress of Veterinary Medicine, and was a staunch supporter of the Royal College of Veterinary Surgeons. Graduating in 1829, he was largely instrumental, we believe, in obtaining the Charter of Incorporation of 1844, and did his utmost to preserve the unity and promote the prosperity of the profession. He was Treasurer to the Royal College in 1846, Examiner from 1844 to 1863, and Member of Council from 1844 to 1864. As evidence of his regard for it, it will be remembered, that when he retired from practice a few years ago, after the sudden and greatly lamented death of his son William, he presented his professional library and museum to the Royal College; and now we learn that, with unexampled generosity, so far as our Corporation is concerned, he has bequeathed one thousand pounds towards the Building Fund, on condition that another thousand pounds be raised by the profession within a year. This is the first legacy our hitherto unfortunate college has received, and were it not that the high character for integrity, honour, business, and skill, would for long years to come cause Mr. Field's name to be remembered, this generous deed would serve to perpetuate it so long as the Royal College of Veterinary Surgeons exists. In William Field, the profession had a warm friend and a strong representative in every way. It showed its esteem for him in electing him its president, and he was also selected as one of the Foundation Fellows when the Fellowship degree was instituted. With the public, Mr. Field was considered a man of unimpeachable honour and integrity, and enjoyed the implicit confidence of all with whom he came into contact; while his excellent business manner made him a valuable and a welcome ally in those public offices in which he interested himself. Since his death, this has been testified to by the public press, and the following notice from *The City Press* of March 14th, gives an example of the estimation in which he was held by one of the city companies:—"At a special Court of the Farriers'

Company, held on Thursday, the clerk announced the death of Mr. William Field, the oldest member of the Court, who died at Bournemouth. He was buried at Kingsbury, where he resided for many years, and was very much respected. A deputation from the Court attended. Mr. Field was admitted to the freedom of the Company on July 1st, 1847, and was chosen a member of the Court of Assistants on June 25th, 1849, subsequently serving the office of Master on three successive occasions, viz., in the years 1852-3, 1868-9, and 1875-6. A resolution expressing the deep sympathy of the Court with the family of the deceased was passed amid universal expression of regret, Mr. Field being held in high esteem by every member." We have no doubt that in the new home which the Royal College must soon possess, an enduring memorial of our deceased and much regretted friend will be raised, so that his memory may be transmitted to future generations, who, we hope, may follow his example.

The second death to be registered is that of Dan Gresswell, F.R.C.V.S., of Louth, Lincolnshire, which took place on March 13th, in the sixty-fourth year of his age. The following extracts from a sympathetic obituary notice, which appeared in *The Louth and North Lincolnshire Advertiser* for March 17th, will give an idea of Mr. Gresswell's career, he being at the time of his death an alderman of Louth :—

"Mr. Alderman Gresswell was born May 13th, 1819, at Kelsey Hall, in Lincolnshire. After the completion of his preliminary education, it became necessary for him to make choice of a profession ; and as his parents died when he was but young, he had not the benefit of that parental advice and sound judgment which he has so judiciously exercised in the case of his own children. His selection of a profession was finally determined by his love for animals, which was a pronounced trait of his character. Subsequently to a three years' pupilage in veterinary medicine, he matriculated at the Royal Veterinary College in London, where his whole course was marked by indefatigable industry and the greatest success. Here he earned the good opinion of all his tutors and examiners. Among the latter may be mentioned the well-known names of Sir Astley Cooper, Bart., Charles Spooner, Edward Stanley, and Richard Bright. He also studied at St. Bartholomew's Hospital for some time, under the especial tutelage of the eminent surgeons, Stanley and Lawrence. With a view of gaining a clearer insight into pathology, he studied it in its true, its widest, sense—the science of disease ; and to this must be attributed his marked success in his profession. He took the Diploma of the Royal College of Veterinary Surgeons on June 18th, 1840. . . . He now proceeded to devote his attention to his future prospects in life, and decided, after a brief consideration of a proffered commission as veterinary surgeon in the Indian Army, to settle in Louth. Here he rapidly secured a prominent position, and became known not only in Lincolnshire, but throughout England as a consulting veterinary surgeon. He married December 18th, 1845. On February 20th, 1877, he was elected to the Fellowship of the Royal College of Veterinary Surgeons. . . . He was at an early date impressed with the truth of the germ theory as applied to infectious and contagious diseases, and many of his papers, written long prior to Koch's discoveries, show that he confidently anticipated the discovery of a germ in Tubercle. . . . Mr. Gresswell first entered upon public life in 1862, being elected to the Town Council on the 1st November that year. Since that time his connection has been a continuous one. He was elected an Alderman in April, 1871, and on the 9th November in that year was raised to the highest position it was in his fellow-burgesses' power to confer, viz., the chief magistracy of the borough. The year of his mayoralty was not specially characterised, and yet it is not too much to say that he filled the chair with credit, and surprised even those who knew him best by his

assiduity and general ability. The deceased had one or two crotchets, which were quietly passed over by those who knew his sterling honesty, and felt how small his failings were in comparison with the services he rendered. Mr. Gresswell was always popular amongst the poorer classes of his neighbours. Few knew how quietly and yet how readily many a charitable act was performed by him. In large matters the deceased could not be called liberal, but in the every-day walk of life he was exceedingly so, not only in the town, but also in many a country village in the surrounding district. The deceased gentleman had been out of health for some months past, and his end was not unexpected by his medical attendant. . . . He has left a widow and numerous family to mourn his loss, and, attached as he was to his home, that loss must be severely felt amongst the members of the same."

Mr. Gresswell was one of the Foundation Fellows of the Royal College of Veterinary Surgeons, and was appointed a member of the Examining Board for England and Scotland in January last, but was unable to attend the examinations that month, his place being taken by his son, C. Gresswell, of Nottingham. In the profession, Mr. Gresswell occupied a high position, and his contributions to its literature were many, varied, and valuable. By his numerous pupils and those colleagues who had the good fortune to know him, he was much esteemed and respected, and he leaves behind him a good name, as well as worthy representatives in his sons who have entered the veterinary and the medical profession.

John Tatam, M.R.C.V.S., died at Leeds on March 8th, aged fifty-one years. He graduated in 1855, joined the army in that year, and only a short time ago held the position of Inspecting Veterinary Surgeon in the Army Veterinary Department, but was retired in consequence of disease contracted in India, and commenced the practice of his profession in Leeds. Quiet and unassuming, Mr. Tatam performed his military duties with care, skill, and diligence, and earned the goodwill of the officers under whom he served. By his colleagues in the army he was much liked, and his early death will cause some emotion among those who best knew him. He has left a widow and a large family.

Mr. Timothy Coleman, M.R.C.V.S., of Blofield, Norfolk, died on March 11th, aged seventy-five years, having graduated in 1237. He had been in extensive and successful practice in the county of Norfolk for the long period of fifty years, during which he enjoyed the universal confidence and esteem of all with whom he had dealings. He was a just and upright man, and generous almost to a fault. By his death the rich in his locality have lost a wise counsellor and the poor a never-failing friend. By his death a widow and numerous family are left to lament their loss.

On February 2nd, William Furnivall, M.R.C.V.S., died in his fifty-second year. He was third son of the late G. F. Furnivall, Surgeon of Egham, and graduated in 1855. For some time he had been ill and unable to attend to his practice, which have caused his wife and family to be left in very indifferent circumstances.

A young member of the profession has died in the person of Robert Hall, M.R.C.V.S., of Stockton-on-Tees. He graduated in 1864, and was only thirty-nine years of age at his death.

Of our foreign colleagues, we have to report the decease of Professor Lundberg, Director of the Veterinary School at Stockholm.

Notes and News.

CATTLE PLAGUE IN EGYPT.—From Cairo we learn that Cattle Plague is reported to be assuming alarming proportions in Charkieh and Galionbieh provinces. This scourge first appeared in the country in 1843, when it was stamped out by the energetic measures taken by Mehemet Ali. It next showed itself in 1863, and it is believed to have cost the country seven millions since then. It has always existed to some extent, and successive governments have treated it with equal indifference, referring it, as is customary with such responsibilities of office, to commissions. Should it now resume the epizoötic form, it would be difficult to exaggerate the consequences to Egypt. Strong pressure should be put on the Ministry to compel them to grapple intelligently with the evil. That such pressure should be necessary may seem extraordinary when the fact is mentioned that the Ministers themselves are large landowners, and must be the first to suffer. But it is none the less true that without such pressure no measure of any importance is likely to be carried out.

A BLIND CAT.—An interesting account of a cat which became quite blind, rather suddenly, from cataract, when about four years old, is given by Mr. Hovey in the *Scientific American*. At first the cat would sit and mew most piteously; and when he tried to move about he met with all conceivable mishaps—ran against walls, fell down stairs, stumbled over sticks, etc. If placed on the top rail of a fence he would traverse its whole length seeking vainly for a safe place to jump off. On being called he would run about in a bewildered way. Ere long, however, Dido (so called, irrespective of gender) showed a power of adaptation to altered conditions. He became able to run down stairs at full speed, turning into the hall after the last step. In this process he went to one side on the top step till he felt the banisters touch his whiskers, and by these he was guided. One by one he made each familiar path a study, noted the location of each door, etc., and with such success that it often seemed as if sight had been restored; but if an unexpected obstacle was placed in his way he showed, by running against it, that he was still quite blind. Dido seems as eager for war as he formerly was, and he even goes abroad in quest of adventures. His value as a mouser does not seem to be in the least diminished. Put into a closet where rats were suspected, he was found in the morning mounting guard over a large rat he had killed. Dido's sense of smell is by no means acute, yet he uniformly chooses the shortest road home without reference to the path he may have taken in leaving the house. Once when the ground was thickly covered with snow, Mr. Hovey took Dido out a considerable distance, and after making a number of turns to bewilder him, tossed him on a drift and awaited results. The animal turned his head in various directions and mewed piteously; but finding he was left to his own resources, he stood motionless for about a minute, and then, to the author's surprise, made his way directly through the untrodden snow to the house door.

HABITS OF BEES.—Mr. Robertson contributes a paper to the *Scientific American*, with the view of removing the common charge preferred against bees, that they destroy grapes and other fruit. To prove that the charge is, at least to some extent, unfounded, he made the following experiment. He placed a quantity of grapes near a hive, and observed that for several days the bees did not touch them; but when a number of the grapes were pricked or bruised, then the bees immediately commenced to devour these, though

they did not attack the sound ones. From this and other observations, Mr. Robertson concludes that bees only meddle with fruit already damaged by other insects and by birds, and that, in consuming damaged or diseased fruit and converting it into honey, they are rendering a real service.

H. Vogel, of Munich, makes some remarks in *Humboldt* on the identity of the effects of the nettle sting and that of the bee and wasp. This identity he shows to exist, and that it is due to the presence of formic acid in the thorn of the plant and sting of the insects. With bees this formic acid serves not only as an offensive agent with which to annoy or destroy their enemies, but also as a preservative of their honey from fermentation. So that, according to Holz, there is some advantage in having an irritable or pugnacious hive, as every time it is disturbed or excited, each bee sheds a drop of formic acid in its honey, which is thereby rendered more savoury and less disposed to decomposition.

VETERINARY HONOURS.—Our esteemed colleague, *outre mer*, Dr. Toussaint, Professor of Physiology at the Veterinary School of Toulouse, and whose scientific labours are so well known, has been nominated a Chevalier of the Legion of Honour. The same Gazette which contains this decree also confers upon M. Duplessis, Principal Veterinary Surgeon of the 1st class in the army, the grade of Officer of the Legion of Honour.

It gives us great pleasure to announce that M. Mégnin, Veterinary Surgeon in the French Army, has obtained the prize of fifty pounds offered by Lord Walsingham for a memoir on the destructive parasite, the *Syngamus trachealis* of the pheasant. M. Mégnin has done well to win this English prize. He has also been fortunate in obtaining a recompense of 1,500 francs (£60) from the Académie des Sciences for his work, "Des Parasites."

DEATH OF A FAMOUS RACE-HORSE FROM GLANDERS.—A telegram from Vienna, on March 6th, states that the famous race-horse Kincsem, who was never beaten in any race, was shot the previous day, with its foal, having been taken ill of Glanders. It won fifty-four races, but was lately withdrawn from the turf, because it could not carry all the extra weight put upon it. Ten thousand pounds were several times offered for Kincsem, whose merits were discovered when it was too late to enter it for the Derby. Kincsem was considered superior to Kisber.

THE BELGIAN VETERINARY SCHOOL.—By Royal decree of January 24th M. Thiernesse, director and professor, and M. Gerard, professor, at the Brussels Veterinary School, were retired. A decree of February 10th nominates Dr. Wehenkel, ordinary professor at the school, to be director.

THE GERMAN REICHSTAG.—M. Antoine, veterinary surgeon at Metz, has been elected to represent that city, as deputy, in the German Parliament. He bears a very high character in Metz, and the many important services he has rendered his co-citizens have been well recognised in this mark of their confidence in him.

A CURIOUS DISCOVERY.—A short time ago, in the neighbourhood of Namur, a farmer had a cow which was losing condition and likely soon to die, so he had the animal killed. In cutting up the carcase, there was found impacted in the œsophagus a large and fine gold medal of the sixteenth century. It is supposed that the cow in grazing had picked it up on the pasture, and attempted to swallow it, when it became fixed in the situation in which it was discovered. The piece is a quadruple pistolet of Franche

XUM

Comté, struck at Besancon in 1578. On the obverse is the effigy of Charles Quint, superbly engraved, and on the reverse the double eagle with the pillars of Hercules on its breast. It is rather strange that no other example of this coin is known, and it is probable that it formed part of treasure buried during troublous times, and that excavations made where the cow usually grazed had turned it up to the surface, where the beast fortunately (unfortunately for it) secured it. The medal is now in the Numismatic Cabinet of the Bibliothèue Royale of Brussels.

VETERINARY PRACTITIONERS.—The following incident happened in the court-room of Binghamton, United States, and will interest all students of comparative anatomy :—

The case in point was this :—Mr. A. sold a colt, as a gelding, to Mr. B., which colt had had but one testicle removed, the other remaining within the cavity of the abdomen. The veterinary surgeon who had castrated the animal was sworn, and on his cross-examination by the attorney, stated the following interesting features in the anatomy of the horse :—

Attorney.—What are varicose veins and where are they found?

Witness.—I don't know, but I can tell where the bellicose veins are.

A.—Where are they?

W.—Close to the belly.

A.—Where is the scrotum?

W.—I am not quite certain, but I think that it is the film that covers the teeth during infancy.

A.—Have you ever made any examinations in the abdominal region?

W.—No; all of my examinations have been made in Broome County.

A.—That is sufficient.

RABIES IN IRELAND.—For some time cases of rabies have occurred in various parts of Ireland, and not long ago the pack of harriers at Barrymore, Co. Cork, had to be destroyed, in consequence of the disease appearing among them. On December 20th, a few days previous to this event, two of the harriers were wandering about the country and biting people, among them being a child. At the commencement of February this child showed symptoms of hydrophobia and died in three days. At that time more than 1,000 persons had been fined in Cork local police-courts for allowing their dogs to run at large without being under proper control.

LIVE STOCK STATISTICS.—It appears from statistics which have recently been compiled that the United States possesses, in round numbers, 38,000,000 cattle, India 30,000,000, and Russia 29,000,000. Russia has 20,000,000 horses, the United States 10,500,000, and Austria 3,500,000. Australia possesses 80,000,000 sheep, the Argentine Republic 68,000,000, and Russia 63,000,000. The United States comes fourth in this list with 36,000,000, but in the matter of swine she heads the world, having 48,000,000. The goat is an important animal in many countries—India is credited with no less than 20,000,000, Africa with 15,000,000, and Mexico with 6,000,000. From the above figures it will be seen that the United States comes first in the list of nations with the two most important articles of flesh food, cattle and hogs; while she is second in horses and fourth in sheep. In regard to the latter two animals, however, she is making rapid strides to a higher position.

XUM

Correspondence, etc.

THE NATIONAL VETERINARY ASSOCIATION.

DEAR SIR,—Will you kindly permit us to announce, through the medium of your Journal, that the first meeting of the "National Veterinary Association" will be held on Tuesday, 8th of May next (the day after the annual meeting of the R.C.V.S.), in the Lecture-room of the Society of Arts, John Street, Adelphi, Strand, W.C.? It is proposed that the business of the sittings be arranged as follows:—

(*a*) To adopt rules for the future guidance of the Association.

(*b*) To elect officers and appoint time and place of next meeting.

(*c*) To receive the President's address.

(*d*) To debate on the *major subjects*.

1. Prof. Robertson will open the discussion of Prof. Walley's paper on "The Contagious Diseases (Animals) Act."

2. Mr. Fleming will open the discussion on Mr. J. H. Cox's paper on "Tuberculosis" in the lower animals, and its communicability to the human subject.

(*e*) Minor subjects to be submitted in the form of questions, for the meeting to vote for or against.

Gentlemen who wish to introduce a *minor subject* should forward the same in form of a question to either of the Secretaries before April 10th.

That the necessary provisions may be made, the Secretaries will be glad if those who wish to join the association and attend the May meeting, will kindly send in their names and subscriptions as early as possible.

It is intended to forward a printed copy of each of the major subjects for discussion to the members at least a fortnight before the meeting, so that the papers be taken as read, and the debate thereon opened at once, so as to economise the time of the sittings.—We are, dear sir, yours faithfully,

GEO. A. BANHAM,
Downing Street, Cambridge;
JOHN PENBERTHY,
Royal Veterinary College, N.W.,
Hon. Secs.

THE ROYAL AGRICULTURAL SOCIETY'S PRIZES.

DEAR SIR,—Being a competitor this year for the prizes offered by the Royal Agricultural Society, I feel it my duty to make a few remarks respecting the report issued by the examiners at that competition, as it contains an expression of sorrow at the ignorance displayed by the candidates concerning the subject of grasses and their influence in producing disease in cattle. During the whole examination only *one* question was asked that in any way referred to the subject, and that, as I understood it, amounted to this:—"What grasses act as a direct poison to cattle when partaken of by them?" my answer being: "I know of none that do so, unless they (the grasses) are diseased." If I have failed to comprehend the meaning the question was intended to convey, I shall be happy to receive correction. However, it appears some grasses growing abroad do possess this property, but the word "foreign" was omitted, both in the examination and report; consequently, readers are misled, naturally supposing that it refers to those of British growth; few thinking, even candidates for these prizes, that they were ex-

XUM

pected to be acquainted with Indian or African botany; and in one or both countries I believe such deleterious grasses are found.

This report being published also in the leading agricultural papers, apparently casts a somewhat unfavourable reflection upon the profession, because it can hardly be presumed that competitors in this examination have less knowledge of the subject than the majority of their professional brethren, and I regret stockowners should be led to infer that in this country grasses produce illness or death of their stock, whilst veterinary surgeons who attend them are ignorant of the cause. Apologising for thus trespassing on your space,—I am, yours sincerely,

ALFRED H. ARCHER.

March 15th.

GRUNTING IN HORSES.

SIR,—In the report of the discussion on unsoundness which took place at the last meeting of the Midland Association, I observe a statement made by the President, to the effect that "Professor Walley was of opinion that Grunting was not unsoundness." I am afraid Mr. Russell did not accurately gather the sense of my remarks on this subject; the statement I made being that a Grunter was not necessarily a Roarer, or *vice versâ*, and in one sense not unsoundness, but that it was always a suspicious sign, and in my experience a Grunter is only a degree removed from a Roarer; and I illustrated the former part of the assertion by two cases:—

(1) A thorough-bred entire horse "Tester," the property of Mr. Kettle, which when I was a pupil with that gentleman I occasionally rode. This horse would grunt loudly if suddenly struck, or if the heels were dug sharply into his sides; but I could never get a sound out of him in cantering or galloping.

(2) A brown bony horse, valued at £100, which I had examined a few months prior to the date of the Midland meeting. Grunted loudly when ribbed; but on subjecting him to two very severe tests, I could not detect the slightest abnormality in the respiratory sounds.

In order to prevent any misconception on this point, I adhibit an excerpt from my lectures on the subject of Grunting:—

"A Grunter is not necessarily a Roarer, and many horses—as also many men for that matter—will emit a very pronounced involuntary grunt when ribbed, and the bigger the horse, the more likely he is to do so; equally will many horses grunt when struck with the spur or heel in riding, or at the drop in leaping. Frequently it is only an expression of fear. Grunting, however, is always suspicious, a Grunter being very frequently only a degree removed from a Roarer, and in my experience time only is required to convert the one into the other. Grunting without Roaring is not indicative of laryngeal, but of cardiac or pulmonic defects, or of a Pneumogastric Neurosis. If a horse grunts to the whip, cough him, put him to severe exertion, and carefully examine his pulse and heart: if the cough is normal in character, if no abnormal respiratory sound is emitted, if the animal shows no distress, and the pulse-beats and heart-sounds are normal, you may, while accepting no responsibility yourself, advise purchase with a special warranty for a few months, or at a reduced figure."

I am yours faithfully,

THOMAS WALLEY.

VETERINARY POLITICS.

SIR,—As the pages of your Journal have been so much occupied of late, I have refrained from adding to its contents; but owing to remarks made by several of your correspondents, I feel constrained to ask you to afford space for the following.

In the first place, I may observe that I call in question no man's right to pen what he pleases in any matter relating to our profession, nor the right of any journalist to give publicity to the same; but I must candidly confess that I feel to some extent astonished that any person loving his profession and caring one jot for its advancement could be found ready to indite the scurrilous and contemptible matter which has recently fallen from the pen of at least one of your correspondents; and I further confess to a feeling of regret that space should be found in the pages of a scientific journal for such an effusion as the one which appeared in your issue for February by an anonymous writer. However much a man may differ from another in his views, he is not entitled to have recourse to abuse and villification of his opponent. Abuse is not argument, and no amount of it will ever clear up a disputed question.

I should not have noticed in the most remote degree the attack made, in your February number, by "Asmodeus" upon Professor McFadyean had not Mr. J. Fraser seen fit, in his letter of the 12th ult., to allude to that gentleman and myself in the manner he has done. I have not, to my knowledge, the slightest acquaintance with Mr. Fraser, consequently I do not pretend to judge of his motive in speaking of my colleague in such a contemptuous manner. Mr. Fraser may not be aware that "lads" have often proved themselves superior to men; and if he is desirous of emulating Professor McFadyean's scientific attainments, by all means let him do so; but I will promise him one thing, viz., that he will have to employ his time in a different manner than in the coining of contemptuous epithets. Professor McFadyean's scientific attainments are too well known by those associated with him to require any notice of them here, except perhaps that I may remind Mr. Fraser of one or two matters connected with his professional career.

Professor McFadyean was one of those students so often termed "theorists;" but notwithstanding this, he succeeded in carrying off all the best class prizes in his year, and to run a "practical" student very close indeed for the first "Fitzwygram prize," gaining the second place in the competition, or rather losing the first, by, I think, about six marks.

So much did he distinguish himself in his College career that I had no hesitation (being well able to judge of his capabilities as an anatomist by virtue of having been his teacher in that subject) in recommending him to the trustees of the College as teacher in anatomy, and they had no hesitation in appointing him to the position. How far I was justified in so recommending him I leave to those who have had the benefit of his prelections to say.

As I have said before, Professor McFadyean is not the first "lad" who has shown himself, as a teacher, infinitely superior to those much older than himself; and if Mr. Fraser wants other proofs of his capabilities, I may refer him to the successful termination of the task he set himself—in spite of a severe illness, and in spite of his arduous duties here—of obtaining the double qualification of M.B. and C.M. in the Edinburgh University. How highly he was appreciated by his teachers there, Mr. Fraser may perhaps gather from the fact that he was recommended for a position abroad, and offered the position at a salary exceeding the four figures, but which he refused—a refusal, I suspect, that few of those who have vilified him will have the opportunity of giving.

XUM

Mr. Fraser says "he does not so much blame the 'lad' as Professor Walley for allowing such trash to find utterance in his presence." Let me, once for all, tell Mr. Fraser, and all who have made similar remarks, that I don't pretend to place myself either in the position of censor of, or of sponsor to, my colleagues; they are perfectly at liberty to hold what views they please; and Mr. Fraser must entertain very narrow ideas of the relationship existing between us if he for a moment supposes that I shall, at his bidding, put a gag in the mouth of any one of those with whom I am associated. It would be a bad day for this institution if its teachers were reduced to one dead level. Were I a tyrant, or had I the desire of exercising a tyrannical power, I might think otherwise. But enough of this, sir. Mr. Fraser is quite welcome to think as he chooses, and I hope he will accord the same liberty to myself and those whom he despises.

The present relations of the schools to the profession and its Council are such as to demand the serious consideration of all those who are desirous of seeing our profession occupying the position it deserves in the estimation of our fellow-men, and I may be pardoned if I venture to trespass to an undue extent upon your valuable space.

I may premise that the profession does not claim a member who is more anxious than myself that it should advance in the highest and truest sense of the word; and if I differ in my views as to the way in which this advancement is to be gained from those entertained by its other friends, I can at least claim that one common bond of sympathy and union with them, viz., that the day may not be far distant when it will occupy the highest position in the eyes of all the more intelligent members of the community.

To the question, "Is fresh legislation required?" I unhesitatingly give a negative answer. Rather, in my opinion, should the Council devote itself to the revision and consolidation of its bye-laws and regulations. For the past two or three years the schools have been kept in a perpetual state of uncertainty and unrest, not knowing what a day might bring forth, consequently being often unable to give definite information as to the curriculum and examinations, and frequently having to delay for several weeks or months the preparation of the annual prospectus, for fear of some new bye-law being created, or some existing regulation being abolished or changed. As a proof of my assertion that the Council requires rest, I may be allowed to refer to past legislation.

1st. A bye-law was passed to the effect that a student should give evidence, before obtaining the diploma, of having seen at least twelve months' practice. With other members of the Council—a small minority—I insisted that such a step was illegal, but it was taken; subsequently, in order to avoid the possibility of endless litigation and loss, I challenged the legality of the procedure, and even some of those members of Council who had previously assisted in creating the bye-law turned round and assisted me in rescinding it; in fact, if my memory serves me right, the minority vote was a unit, and, on subsequently obtaining the opinion of the highest legal authority of the land, it was found that the Council had no power to create such a bye-law.

2nd. About two years ago, a motion was brought forward similar to the one I made at the last Council-meeting in reference to the oral preceding the practical examination. That motion was carried by an almost unanimous vote, and, in fact, with an enthusiasm I have never seen equalled in the proceedings of the Council; but its adoption and confirmation were unfortunately delayed until the educational scheme should be settled, and when the report of the committee on that scheme was laid before the Council, I discovered therein, to my astonishment, a proposition to the effect that "the practical shall precede the oral," etc. On directing the attention of the

XUM

members of the Council to this erratic proceeding, I was still further astonished to find that, with one exception, they had forgotten the motion had been passed, and, in fact, believed that its further consideration had been postponed, but on referring to the minutes their mistake was made apparent. Notwithstanding this, however, the motion as it stood in the educational scheme was carried. The Council stultified itself, many of those who had previously supported the proposition in the heartiest manner giving an adverse vote. Is this the kind of legislative action to tempt a man to travel several hundreds of miles to take part in?

3rd. The educational scheme has been under consideration for over two years. I have in my possession no less than five different reports—all differing in some respects from each other—referring thereto; and, finally, with its adoption another hardship to the students has been added to those already in existence, viz., that two examinations only are to be held annually.

In reference to the provisions of the proposed new supplemental charter, there are only two to which I shall refer—firstly, the pupilage clause; secondly, the fees.

That every young man who pretends to practise as a veterinary surgeon should see practical work before doing so, is an absolute necessity; but the question arises, How and when is it best to see this practical work? I have always held that a long apprenticeship is a great mistake, and that it is better for a pupil, if he sees practice at all prior to entering a college, to do so only for a limited period; and after he has gleaned something of theory, and has settled into studious habits, to see as much practice as he possibly can, or as his means will allow. Holding this opinion, it may be asked why I oppose the application of powers to render pupilage compulsory. The answer is, firstly, that we have no guarantee how far the period of pupilage may be ultimately extended by the Council; and secondly, that an extended period of pupilage would be a great hardship to many young men with limited means, and would keep many good men out of the profession, especially in a country like Scotland, where so many of those who attain to eminence in the professions and arts do so by downright hard work, and frequently are very poor, keep often, in fact, working in the intervals of study for the wherewithal to support themselves at college. Thirdly, there are many young men, of brilliant parts, who, by the aid of a little practical work during the vacations, added to that which they get at college, are enabled to master the details of professional manipulation in a manner that many of those who have served a long apprenticeship can never attain to. To such as these an enforced prolonged pupilage would not only be a great hardship, but an absolute waste of time.

Fourthly, a prolonged compulsory pupilage means a long purse and a heavy addition to the expenses necessary for the obtainment of the legal qualification; and when the prospect of gain, by the exercise of his professional calling, is considered, how often does the practitioner find that the game is not worth the candle, very frequently associating with his practice some other calling, or forsaking it altogether for something more lucrative.

The examination fees are already high enough, seeing that if a student is unsuccessful three guineas are demanded for each additional examination, and very frequently these fees amount in the aggregate to a sum not far short of that which is paid as college fees. If it is found that the fees do not cover expenses—and I am not aware that this has been shown to be the case—some means should be adopted to reduce the latter.

At present a large sum is paid for travelling expenses—five, six, or seven pounds in some instances—half of which could be saved by appointing residents in Scotland to examine there, at least on some subjects; moreover,

XUM

examiners are paid at the rate of £1 1s. per hour, and under the present system they are actually paid large sums for examining those whom they know are already rejected—is this fair to the student or to the R.C.V.S.?

The position of students under the present system and with compulsory pupilage is as follows :—

(*a*) A large premium has to be paid for pupilage—Mr. Greaves says £100 for three years, but this sum is far exceeded in many instances—and a considerable outlay in most cases is also incurred during the time for board, clothing, etc.

(*b*) A student goes to college, where all his college and examination fees have to be paid, books, etc., to be purchased, and board, lodgings, and clothing provided for a period of at least two and a half years; and if he is unfortunate enough—as some are—to be rejected several times, this period is prolonged to four or five years, or even longer.

(*c*) If a student is rejected in one subject he is, practically, *rejected in all, i.e.*, the subjects in which he has passed are not allowed him in future examinations: so that he may be rejected in one subject in one examination; he works hard to make up that deficiency, and in doing so forgets others, in which, at the next examination, he fails; and so on, until he is knocked about like a shuttlecock. And all the time this agony is being prolonged he is, very often, getting more and more discouraged and downhearted, or becomes utterly reckless of himself and all belonging to him. I ask, why should a man who has passed in one or several subjects be compelled to undergo the ordeal—so far as they are concerned—again? Why is he not allowed to devote all his energies to the attainment of a knowledge of those subjects in which he has shown himself deficient? And further, why, in the final, when he fails in passing the practical, should he not be allowed to go where he is likely to gain practical knowledge, instead of being sent back to the college where he has already had his share of practical work, and where he has to make way for those who come after him? These are questions to which, I think, no man can reasonably give any other answer than by putting another question, viz., Why should these things be? I do not hesitate for one moment to say that some examiners are too exacting. They expect young men to give answers to questions which would often puzzle their elders, and they do not always allow for the effects of nervousness and anxiety; furthermore, the examiners are not always in accord with the teachers, and confine themselves too exclusively to one particular (often a pet) subject, instead of giving a student a chance by testing his knowledge over a wider range of subjects. In the final examination too much stress is placed on the examination of the horse as to soundness—a subject in which there is frequently a wide divergence of opinion, even amongst the seniors of the profession; and, so far as Scotland is concerned, Scottish practice is not only not fairly represented on the board—it is not represented at all.

In reference to the curriculum, I may point out a modification which I think might be made with advantage in the attendance on the second summer session. If a student has attended all the lectures usually given in the summer, I see no reason why he should not be allowed, after passing the B examination, to go away and see practice, more especially as at that period he has a chance of seeing parturient operations, castration, etc., instead of being kept at the schools to hear a repetition of lectures.

I agree with Mr. Greaves that it would be far better that some arrangement should be come to between the R.C.V.S. and the schools on general matters requiring revision, than that they should be placed in antagonism to each other—a very probable contingency, unless a spirit of concession and compromise is allowed to prevail, as I sincerely hope it will; and I would ask our friend Mr. Greaves to initiate such a spirit by ceasing to rail against young

practitioners, seeing that mistakes are made in practice by veterans as well as by novices. I strongly suspect they are occasionally made by all, and he who does not acknowledge that he sometimes makes mistakes is either egregiously egotistical and untruthful, or too ignorant to know whether he is doing right or wrong. I may jog Mr. Greaves's memory by reminding him of a gross case of malpractice by an *old* practitioner, which he witnessed, in my company, at the establishment of a nobleman not a hundred miles from Manchester some years ago.

Finally, may I be allowed to ask how it is, or at whose door the blame lies, that the army has of late years become nearly closed to young members of the profession? Numbers of young men join our ranks mainly in the hope of obtaining an army appointment; yet, while complaints are made on all sides, both at home and abroad, that the Army Veterinary Department is under-manned, these young men are kept hanging on for an indefinite period, in the vain hope of getting a chance of attaining to the position to which they aspire! And I would further ask whom we have to thank for the inauguration of the recent system of educating farriers in veterinary medicine and surgery? These men bid fair to take the place of that host of empirics against whose practice the R.C.V.S. has so recently been directing all its legislative energies. It is only a few months ago that, on calling upon a brother practitioner, I saw a man walk into his yard, and, with a very consequential air, ask for a description of the symptoms, etc., of the then prevailing epizootic of Influenza. That man, I was afterwards informed, was an ex-farrier sergeant, whose appointment in the establishment of a well-known nobleman lost my friend an annual income of £60 or more. If army veterinary surgeons are to give lectures on veterinary subjects, can they not be given to army veterinary candidates? and why should not the latter be appointed, even before obtaining the diploma, to some such position as veterinary assistant or dispenser? —I am yours truly, THOMAS WALLEY.

TUBERCULOSIS.

SIR,—Reading in the VETERINARY JOURNAL for this month the proceedings of the quarterly meeting of the Scottish Metropolitan Medical Association, I noticed, under the heading "Interesting Cases," a statement made by Professor Walley, that he thought it was the duty of the profession to memorialize the Privy Council to include in the schedule of the Contagious Diseases, viz., tuberculous diseases of the tongue and lungs in cattle.

I think the professor could only be jesting, or that he thought the Privy Council were too stringent by closing the markets against the sale of stock, because the Foot-and-mouth Disease prevailed in some parts, although it is contagious, but of so simple a nature that not one in a thousand succumbs; and it is so easily treated by a practical man, that the farmers and graziers would sooner have it in their yards than be subject to the annoyance of the markets being closed, which is very injurious to all trades.

During the forty years I have been in practice, I have had many cases both of tuberculated tongue and lungs under my care. One of the lungs I have fresh in my recollection. The bullock was housed all winter with others, and grazed in the summer months with different beasts, all the time losing flesh; but none of the others were ever affected with the complaint. I have found the tubercles vary in size, from a small pea to a large egg, and altogether almost fill the chest. The nature and character of tubercles in the latter stage (as I have mostly found them) are of a yellowish grey colour, opaque and firm, and their consistence being about that of cheese.

Pulmonary tubercles appear from high authority to contain animal matter, muriate of soda, phosphate of lime, and carbonate of lime. According to

XUM

my experience, there is scarcely any texture of the body which has not occasionally been the seat of tubercle. For instance, there are wens, which mostly make their appearance on the angle of the jaw, although I have had them on other parts of the animal. I have cured as many as five on one bullock; but when they get inside the throat, or on the tongue, they do not admit of cure, with the exception of the butcher's knife. I consider the cause of them to be the food or water of the fens, or both, because I have known beasts go from us with small wens, up the high country, and disappear without any treatment whatever. But tuberculous diseases, in my opinion, are by no means contagious.—I remain, sir, yours truly,

Spalding, *Feb. 22nd.* ROBT. P. FOSTER.

CORRECTIONS.

IN the pass list of students given at p. 221 of the Journal for March, H. M Singleton is shown as having passed with Great Credit. It should have been A. Gill.

In Mr. Raymond's paper on "Echinococcus Veterinorum," instead of "about a gallon of hydatids, etc., was evacuated," it should have been "about half a gallon."

The demands on our space compel us to hold over the reports of the Liverpool and North of England Veterinary Medical Societies, also a communication from Mr. Leeney, until our next issue.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from E. Semmer, Dorpat, Russia; R. P. Foster, Spalding; J. G. Cross, Shrewsbury; A. Lydtin, Carlsruhe, Germany; J. W. Wolstenholme, Manchester; T. H. Simcocks, Drogheda; R. Rutherford, Edinburgh; T. Walley, Edinburgh; W. F. Garside, Cirencester; M. Hedley, Dublin; T. Greaves, Manchester; F. Raymond, A.V.D., India: J. Roalfe Cox, London; A. Broad, London; C. Gresswell, Nottingham; W. Hall, Exeter; M. E. Naylor, Wakefield; C. Furnivall, London; A. W. Hill, London; "Embryo"; A. Bain, Liverpool; J. Pemberthy, London; G. Morgan, Liverpool; H. Leeney, Brighton; "Verax."

BOOKS AND PAMPHLETS: *R. Molkentin*, Ein Beitrage zur Sicherstellung der Diagnose des Occulten Rotzes; *J. Girardin*, Leçons de Chimie Elémentaire appliquée aux Arts Industrielle; *M. Wilckens*, Form und Leben der landwirthschaftlichen Hausthiere; *G. Gsell et P. Renier*, Manuel de Médecine dosimetrique Vétérinaire; *A Johne*, Die Geschichte der Tuberculose; *P. Toepper*, Die neueren Erfahrungen über die Aetiologie des Milzbrandes; *W. T. Black*, Medical Notes and Statistics of the British Expedition to Egypt in 1881; *W. Tappe*, Der Lungenbrand der Pferde.

JOURNALS, etc.—*American Veterinary Review; Oesterreichische Vierteljahresschrift fur Wissenschaftliche Veterinarkunde; Der Thierarzt; La Clinica Veterinaria; Deutsche Zeitschrift fur Thiermedicin und Vergleichende Pathologie; Revue Vétérinaire; Archives Vétérinaire; Live Stock Journal; Recueil de Méd. Vétérinaire; British Medical Journal; Chicago Live Stock Journal; Mark Lane Express; Annales de Méd. Vétérinaire; L'Echo Vétérinaire; Journal de Méd. Vétérinaire et de Zootechnie; Lancet; Wochenschrift für Thierheilkunde; Edinburgh Medical Journal; Sanitary Record; Bulletin et Memoires de la Soc. Centrale de Méd. Vétérinaire.*

NEWSPAPERS—*Manchester City News; Bury Times; Shrewsbury Chronicle; Freeman's Journal; Irish Sportsman; Montgomeryshire Express; Irish Times; Cork Evening Telegraph; Montreal Herald; Louth and North Lincolnshire Advertiser.*

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion must be authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith. We cannot undertake to return rejected communications.

XUM